Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

THE LOMMA RAiNWORM, NEW PEASANTRY & A HUNDRED POTATOES

Integrating local participation to co-create future multifunctional foodscapes in an academic research facility, southern Sweden.

Alix REVÉREAULT TOKUNAGA

Independent project (30 hp)
Swedish University of Agricultural Sciences, SLU
Department of Landscape Architecture, Planning and Management
Landscape Architecture Master´s Programme
Alnarp 2025

ACKNOWLEDGEMENT

I would like to start by thanking Anna for supporting my idea from the beginning and being of great help all along the process of writing and framing the research. Thank you to Alnarp's farm for being a warm and beautiful place filled by so many wondeful students and farmers and allowing this thesis to exist. And lastly, thank you to all the fellow friends who were also somewhere in the process of writing their thesis, for valuable reflections and exchanges.

The Lomma Rainworm, new peasantry & a hundred potatoes

Integrating local participation to co-create future foodscapes in an academic research facility, southern Sweden.

Alix REVÉREAULT TOKUNAGA

Supervisor:	Anna PETERSON, SLU, Director of studies Master program Food and Landscape
Examiner:	Nina VOGEL, Lovee SiLOW, SLU, Department of Landscape Architecture, Planning and Management
Credits:	*30 hp*
Level:	*Master's level A2E*
Course title:	*Independent Project in Landscape Architecture*
Course code:	*EX0852*
Programme:	*Landscape Architecture Master´s Programme*
Course coordinating dept:	*Department of Landscape Architecture, Planning and Management*
Place of publication:	*Alnarp, Sweden*
Year of publication:	*2026*
Original format:	*Double A4*
Cover illustration:	*Sketch by Alix Revéreault*
Copyright:	*All images are used with permission from copyright owner*
Other photos and illustrations:	*All visualisations, illustrations, photographs and texts are property of the authors unless otherwise stated.*
Keywords:	*Participative Design, Landscape Mutlifunctionality, Peri-urban Food Systems, Participant Pbservation, Alnarp's agroecology farm, Alnarp Campus Development, Living Lab, Design Narrative*

Swedish University of Agricultural Sciences
Faculty of Landscape Architecture, Horticulture and Crop Production Science
Department of Landscape Architecture, Planning and Management

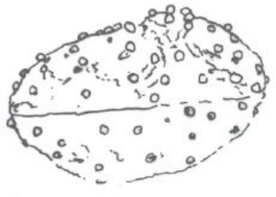
PUBLiSHiNG & ARCHiViNG

Approved students' theses at SLU are published electronically. As a student, you have the copyright to your own work and need to approve the electronic publishing. If you check the box for YES, the full text (pdf file) and metadata will be visible and searchable online. If you check the box for NO, only the metadata and the abstract will be visible and searchable online. Nevertheless, when the document is uploaded it will still be archived as a digital file.

If you are more than one author you all need to agree on a decision. Read about SLU's publishing agreement here: https://www.slu.se/en/subweb/library/publish-and-analyse/register-and-publish/agreement-for-publishing/.

■ YES, I/we hereby give permission to publish the present thesis in accordance with the SLU agreement regarding the transfer of the right to publish a work.

□ NO, I/we do not give permission to publish the present work. The work will still be archived and its metadata and abstract will be visible and searchable.



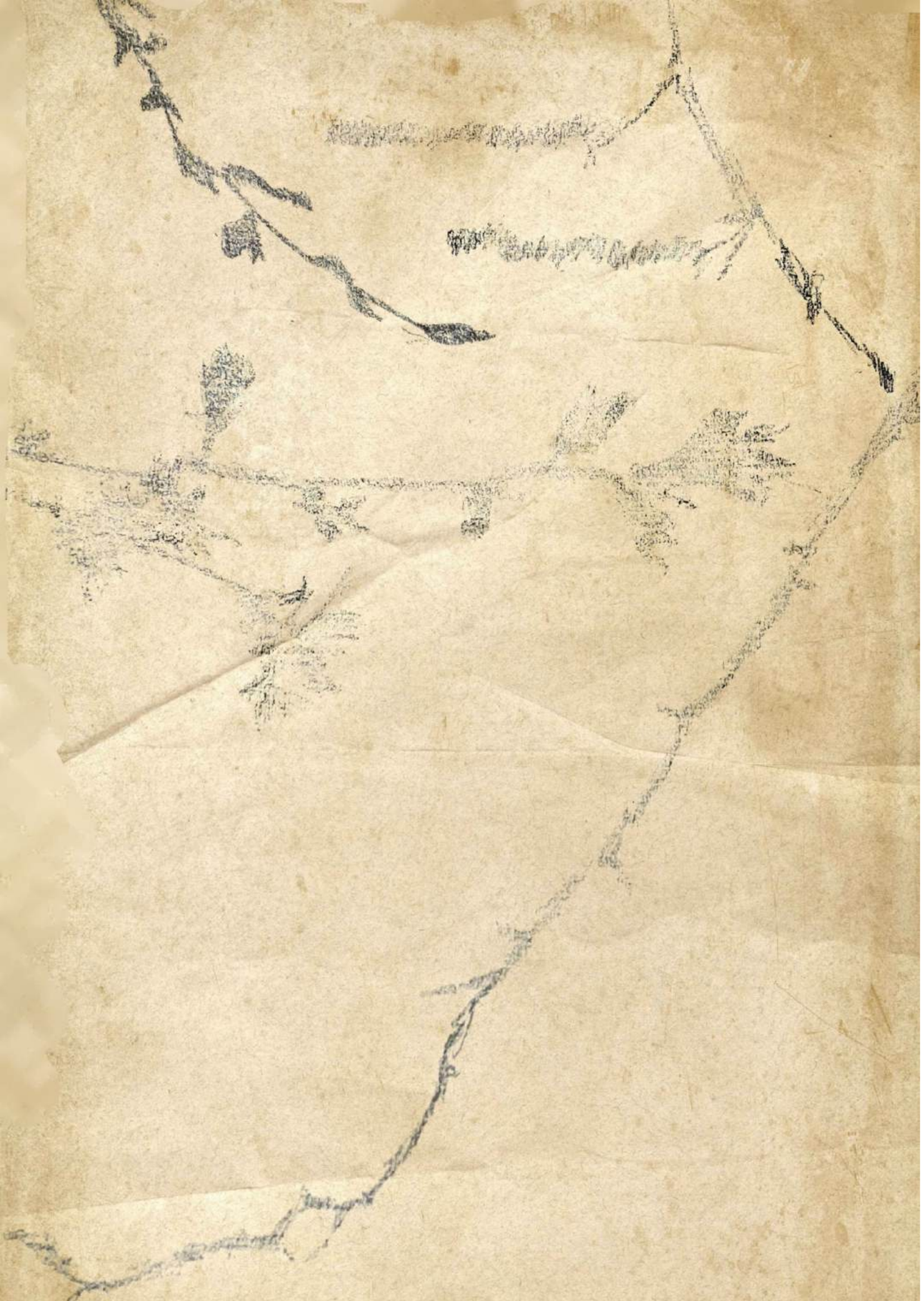
PROLOGUE

This thesis was born on a farm in Alnarp, after I had spent a year visiting and farming occasionally at Alnarp's agroecology farm. Studying on campus, and biking off to the farm whenever I had a small time window to help with weeding, planting, harvesting, or anything farmers do. That was the rhythm in which my interest in this farm grew. I realized a big part of the farm's purpose was to improve the general quality of the soil on this small patch of land, but it was not something humans can do by themselves - it requires the involvement of an entire food chain, starting from the rainworm. The term rainworm was often used more than earthworm at the farm because they tend to surface from underground during precipitation, and it naturally stuck with me. I had never been so fond of these slimy, simple-looking creatures, until then, when I understood their existence was a blessing for the soil aeration, quality of compost, and food production, as well as for the species feeding on these nutritious beings. Seeing a rainworm was a good sign that the land was responding to the farming techniques we used, evoking joy and fertility. The rainworm grew on me and I knew that I would find them in the fields, but precisely would be crawling in the rich soil of the farm. Before joining this farming community, I had an understanding of peasants as smallholders of land living under rather poor conditions, with a mundane life, the sole purpose to grow food for themselves. The peasantry I experienced on this small scale-farm made me rethink this statement. Being outside, with the wind, the birds chipping, the ever-changing shapes and colors of plants, speeding skies, growing sizes and tastes of vegetables, and moving your body according to each season made me realize how rich peasant life actually is. And to feed oneself with the result of months of collective work, the food the community has grown together gave it a whole new taste I had never experienced before. This new peasantry gave me eagerness to learn, cultivating hope, not only for the quality of food but for bringing people together and seeing real results in the fields. 2 steps away from university, I felt more connected with fellow students, and wished to spread and share this collective energy with more students from other backgrounds. That being said, farming and experimenting are fun until, on a systematic scale to this day, it still means living a relatively precarious life. The French saying "cent patates" ("one hundred potatoes") brings farming back to trading stuff or food with potatoes, as potatoes have been a staple food source across centuries in those climates. It is a symbol of autonomy, wealth, and reliance, while keeping financial stability essential to a farmer's longevity. It has become today a symbol of non-monetary exchange and collaboration, which could open new paths for the farm and its locality. I wish for Alnarp's farm and other small-scale farms to be supported for all the work and generosity dedicated to considering every being as part of their farm ecosystem, working along rather than fighting them, providing healthy and nutritious food to the local community, and continuously aiming to safeguard the livelihood of future generations.

TABLE OF CONTENT

LiST OF FiGURES

LiST OF TABLES



I. iNTRODUCTION

RESEARCH iNTRODUCTiON

1.1 Problem statement

Our current landscapes are facing many land-use issues driven from human activity, with around three-quarters of our land surface affected (Masson-Delmotte et al., 2021). Land fragmentation, resource exploitation, and extraction have been widely practiced, reflecting our modern political, social and cultural values (Taylor et Francis, 2014). Over half of the human population lives in urban areas (Ott, 2024), a figure expected to increase as the need to be fed is recognized as one of the major challenges of the coming decades (Loconto et Fouilleux, 2019).

As populations are deserting rural areas and are being replaced by large companies taking over rural agricultural production, we are disconnecting from the means of growing food. By expanding field size and ecologically simplifying plantations, our foodscapes are pushing back wild species in ever-smaller reserves of biodiversity, threatening their stability. The earlier wetlands and diverse ecosystems of South Sweden (Scania), on which many species and native cultivars relied, are facing environmental and climate change; those shifts have been studied worldwide in the Sixth IPCC report (2023) and are largely linked to agricultural and urban expansion (Lee et al., 2023). It became clear that reestablishing biological diversity on agricultural land through diversifying its ecosystems and uses is essential to restoring those declining landscapes. As urban areas expand into surrounding fields, the need to develop innovative and sustainable land use or land cover becomes key for regulating local climatic conditions (Tilman et al., 2002). Questioning critically the ways we design, manage and connect with our landscapes today, as those environments become less viable for future generations.

Ensuring the stability of our soil health sets the foundation for growing food and preserving biological diversity (Gliessman, 2015). Therefore, restoring the conditions for native species to exist within our foodscapes is crucial for sustaining agroecosystems through soil fertility, biodiversity niches, biological pest control, and climate mitigation (Foley et al. 2005, Tscharntke et al. 2012, ibid.).

In Southern Sweden, amongst many places, growing pressure on production has forced farms to operate as an industry producing cash crops, draining energy from soils and farmers. As we seek alternatives to this model, numerous studies show that peasant and small-scale farming methods are commensurate with industrial agriculture in terms of productivity (Gliessman, 2015). However, power imbalances in the global market act as an obstacle to individual farmers converting to more sustainable practices (Rossi et al. 2023). We find ourselves in a situation where both big and small scale-farms are unable to be financially successful for multiple reasons.

Against this incoherence, it has been recognized that local food production networks in peri-urban areas can be a way towards sustainable food security and biodiversity preservation (Cordato et al. 2024), while offering emerging paths towards agricultural ecosystems closer to natural environments (Altieri et al. 2015). Agricultural landscapes are shaped by the complex interactions between nature and culture (Gutiérrez-Briceño et al. 2024). As mentioned by Codato et al. in Frontiers in Sustainable Food Systems (2024), community gardens would benefit from including multifunctional uses, just as Haaland et al. (2011) argue that agricultural production would become sustainable in fulfilling diverse functions the more multifunctional they are, thereby increasing their resilience to climate change, etc.

Ohta et al. (2024) recognized the importance of community dialogue in enhancing a sense of place, noting that initiatives to increase dialogue seek to develop a sense of belonging and attachment to agricultural systems (Escalera-Reyes et al. 2020). In this context, farmers, at their own scale, are the starting point of a transition towards ecologically, economically and socially conscious agricultural landscapes. Starting from a local, place-based perspective, a community can be brought together around land-use practices, habitat conservation, and food production. This will inherently be relevant to both long-term human sustainability and the resilience of landscapes and biological health.

With this in mind, Landscape Architecture has a role to play in tackling food production issues with farmers. By involving local stakeholders in the design of sustainable peri-urban landscapes, engaging consumers in their local food systems, and offering multiple activities and programs for the well-being of urban societies. This research will study participatory-driven methods to initiate a conversation about a plot of organic land belonging to the Swedish University of Agricultural Sciences (SLU). Located on the Northern outskirts of Malmö, in the municipality of Lomma, right next to a student-initiated project, "Alnarp's agroecology farm", opportunities to promote multifunctional land uses that satisfy local needs and support future innovations arise.

1.2 Research Hypothesis

This paper will be guided by the following questions:

How can local stakeholders' participation in a landscape design process enhance the landscape's multifunctionality?

And how do power balances in the local landscape influence the proposed design?

With reflections revolving around land ownership, co-creative processes, land use, and the physical and institutional fragmentation occurring in the municipality of Lomma, this thesis serves as a tool that opens communicative paths between local stakeholders. Through this research question, the role of landscape architects is re-evaluated as not the sole designer of a given place, but as architects articulating social dynamics relating to a complex environment, entering the fields to engage in dialogues with different parties.

1.3 Project objective

The objective of this thesis is to examine and experiment with the role of the landscape architect within an agricultural context. It aims to explore solutions by initiating dialogue with local stakeholders and collaborating to develop a landscape configuration that responds to local needs and challenges. The project seeks to demonstrate participatory engagement as a foundational approach to exploration within the design process.

By identifying multiple entry points to articulate local needs through design, from idea generation to the submission of a design proposal, the thesis experiments on which processes and methodologies can be replicated in other contexts. These approaches involve different drivers of landscape change and are explored through semi-structured interviews, participatory methods and narrative based design.

Objectives of the project include:

- Imagine multifunctional spaces with and for local users
- Propose a design around existing features
- Integrating local development plans to enhance connection in the landscape
- Strengthening resilience and collaboration within local food systems

1.4 Target group

This thesis is intended to be relevant to any member of the audience interested in the topic. It could present specific interest to Lomma Municipality, SLU University, or Alnarp's agroecology farm among the stakeholders involved in the study, as it gathers research data that could be useful for future planning of the locality. Finally, I wish for this paper to reach individuals in the academic realm and anyone interested in the process of finding solutions for participatory and co-creative approaches to adapt to the future of our foodscapes and peri-urban landscapes.

1.5 Limitations

The boundaries of this study lie in the actual feasibility of conducting such a project with the current workforce and representatives available in the locality. However, the aim being to conduct a participative design research process, realistic collaboration with different parties is integrated in order to come up with a design proposal.

Socioeconomic limitations can be found in very early stages of the study to state that the conversion of the current organic field is only a fiction, as it is currently being maintained by a local research station, which depends on it for its future studies. However, this paper wishes to see past these limitations to allow for optimistic and visionary ideas to be brought to the table, giving the feeling that something is possible and thus making it more likely for stakeholders to see the potential of its feasibility, or at least imagine what could be possible. Time acted as a limiting factor in participatory processes at times due to the lack of responsiveness, which comes with time restrictions and contacting busy stakeholders. An iterative process of going back and forth in dialogue with stakeholders is also limited in time, even though I had taken a full farming season (January 2025 to January 2026) to lead the research and write this paper.

Some results obtained and presented below have been the outcome of months of prior engagement with farmers and volunteers at Alnarp's agroecology farm. The quality and content of exchanges, though framed in academic settings, can present an influence from personal connections with participants.

1.6 Thesis Outline

This paper will go along the following structure:

First, the context section will describe the landscape in its present state, followed by a brief presentation of the case study of this research, Alnarp's agroecology farm. This first section will later present the theoretical framework of the theories I have used in this paper.

In the second section, the methods and tools used to conduct the study will be presented and explored, along with their relevance for this specific research.

The third section will interpret the results from the varied observational and participative processes and showcase the design proposal for the studied field.

Lastly, the discussion and conclusion part of the research will be explored, with further research considered.

CONTEXT

Throughout human history across diverse regions of the planet, traditional small-scale farming has been the main source of nutrition. For 10,000 years, humans have thrived in self-sustained ecosystems to which they belonged. They were adapting their diet to the changing seasons, soils, climate, localities etc. and accordingly diversifying the landscape around them (Gliessman, 2015). A very recent change of mindset and practices towards a productivist society with the industrialization, green revolutions and globalization over the 20th century has turned this ancient culture upside down. Shifting the agricultural knowledge from local peasants to multinational companies that took control of land, seeds, GMOs, chemicals, and pharmaceutical productions (Miguel A. Altieri, Clara I. Nicholls, 2005). The production of food overall may have increased, but many aspects of local practices and management were lost, as well as dramatic biological diversity loss (Leon-Sicard et al. 2024), evidently playing its role regarding global warming (Lee et al., 2023).

To mitigate the pressure put on ecosystems and environments due to those farming practices, the european union has signed the common agricultural policy (CAP) in 1962, with its latest reform in 2023 in aim to put more light on the important role farmers play in the supply chain, aligning with the global environmental crisis in order to build more resiliency in agricultural practices (Rossi et al. 2023). The CAP reform reinforces the need to treat farmers with fairness and highlights the necessity to support young people in working on farmland in the coming years (European Commission, 2022). Along those lines, farmers are treated and subsidized differently according to their practices. While some studies have observed positive changes regarding biodiversity on farmland and conservation of natural areas, others reevaluate the actual effectiveness of the measures taken by the latest policy, given they are not easily quantifiable over such short periods of time (Pe′er et al., 2014).

For Sweden, the landscapes of the majority of the country have been modified to be used for forestry (70%) and agricultural (7.4%) expansion (Swedish forest industries 2022, Jordbruksverket nd). What Wei et al. (2021) have observed on Nordic land cover changes shows that wetlands in particular are facing risks of extinction, as they show the highest rate of reduction since 1992. As landscapes are being modified, their ability to support endemic biodiversity is challenged, as is the case in Scania, the most southern region of Sweden, with the slow drying up of wetlands as the climate changed and human activity exhausted the land over the past decades. Rated as one of the most biodiverse countries in Europe, the country is facing declines of numerous red-listed species dependent on those semi-natural environments (Karlsson et al., 2024).

The agricultural pressure in Scania is due to the high fertility of the land caused by the glacial retreat during the world's last glacial period, leaving behind flat, low-lying plains. Over the last centuries, agrarian expansion has reduced the forest surface to benefit the cultivation of staple cereals and growing pastures for dairy production (see Figure 1 on the next page). Agricultural land is also threatening its sustainability due to large-scale monoculture farming being the main cause of soil erosion, as Scania is frequently exposed to wind and precipitation (Ulén et al., 2012).

Sweden's food sovereignty policies have been greatly influenced by its integration in the European Union in 1995; now interdependent on other countries to supply foodstuffs, Sweden has a food sovereignty of around 2 weeks. Eriksson et al. (2020) have, however, observed a recent change in food security-related policies such as the National Food strategy (2017), which would be an anticipated reaction to the rising tensions in the Baltic Sea region and support self-sufficiency in Sweden.

Sustainable land use efforts have been observed in the last decades through policies, though in the field, it is recognized by farmers of different practices that they are not sufficient and financial support is still lacking. A Varied Agricultural landscape was an objective in the late 90s to place

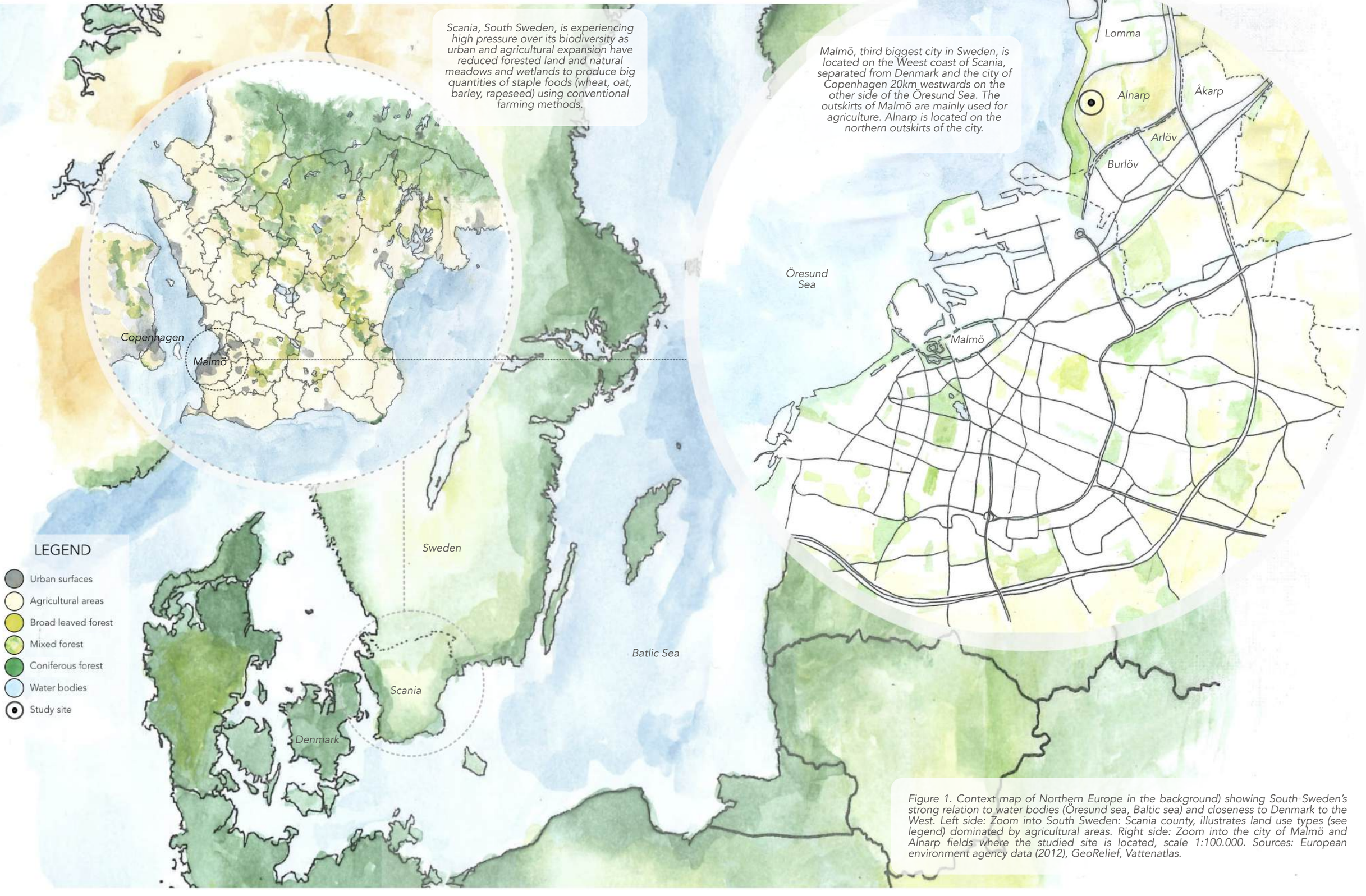


Figure 1. Context map of Northern Europe in the background) showing South Sweden's strong relation to water bodies (Öresund sea, Baltic sea) and closeness to Denmark to the West. Left side: Zoom into South Sweden: Scania county, illustrates land use types (see legend) dominated by agricultural areas. Right side: Zoom into the city of Malmö and Alnarp fields where the studied site is located, scale 1:100.000. Sources: European environment agency data (2012), GeoRelief, Vattenatlas.

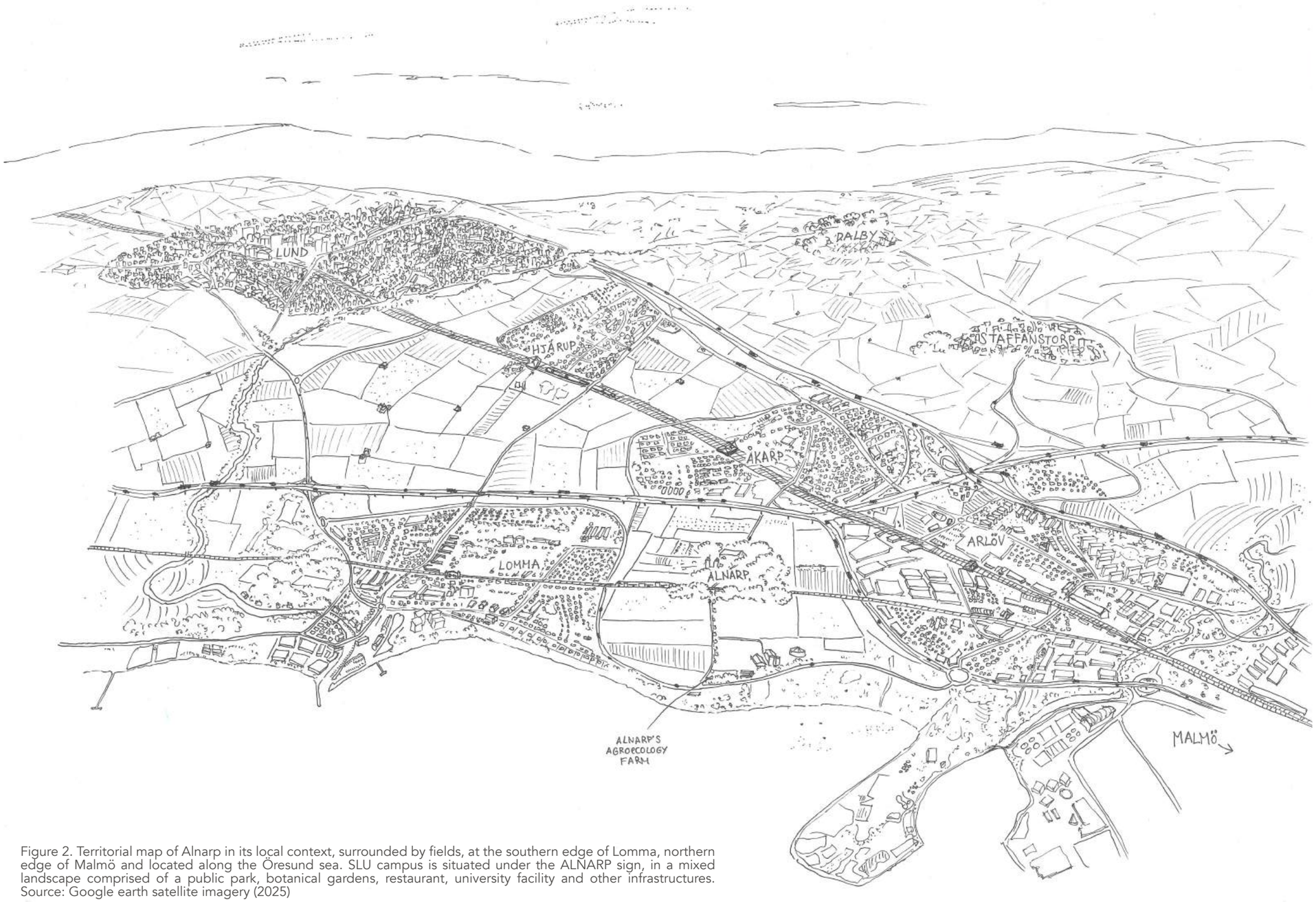


Figure 2. Territorial map of Alnarp in its local context, surrounded by fields, at the southern edge of Lomma, northern edge of Malmö and located along the Öresund sea. SLU campus is situated under the ALNARP sign, in a mixed landscape comprised of a public park, botanical gardens, restaurant, university facility and other infrastructures. Source: Google earth satellite imagery (2025)

environmental concerns at the heart of the agricultural crisis. Preserving small biotopes in areas vulnerable to erosion, maintaining a biological diversity on farmland, decreasing the risks of nutrient leaching by using nature-based solutions and sheltering the local flora and fauna. Numerous action plans, policies and frameworks around agricultural transition exist, yet they are not amplifying stories and do not reflect the reality on the field.

The city of Malmö, the third biggest city in Sweden (see Figure 1), is working towards ensuring a low carbon footprint, organic and seasonal meals in public facilities with the goal to go through Agenda 2030, envisioning a future urban area surrounded by small-scale organic farms (Malmö Stad 2023). Within this context, some local farms have already started the process of nourishing the soils with organic matter, growing organic food for consumers in and around Malmö. These places offer the opportunity for citizens to come closer to natural environments while becoming vibrant social areas and informal learning spaces (Ilieva et al. 2022). As farmers become the main catalysts to support ecosystem services as well as social benefits to the local community, their efforts should be promoted to advocate for sustainable food production and citizens' welfare.

Just outside of Malmö, the University campus of SLU sits in Alnarp. The Alnarp campus is itself situated in Lomma's municipality, a small town home to just under 25,000 inhabitants. Alnarp is bordered by urbanized landscapes while keeping a sense of rurality with its hundreds of hectares of field, owned and managed by the university farm: Alnarp's property (Alnarp's egendom in Swedish). The campus facilities and research infrastructures are concentrated around a forested park, Alnarp's park, and consist of housing, company offices, municipal buildings and a restaurant. Further down the road, towards the Öresund Sea, stand Alnarp's property barns and farm houses, Alnarp's agroecology farm and the Öresund nature reserve bordering the coast. The chosen site for this study is strongly related to those areas that take place in this landscape.

ALNARP'S AGROECOLOGY FARM

Alnarp's agroecology farm (Alnarp's farm or AAF) is a project initiated in 2021 by agroecology Master students of SLU (alnarpsfarm.se). The project was founded on a 400 square meter plot on campus until 2022; due to space constraints, it was relocated to the edge of Alnarp, where it stands today. This four-year-old organic farm is now covering half a hectare of land and has grown rapidly since its establishment. Following agroecological principles, AAF aims to be a live experiment demonstrating agroecology as a « holistic study of the agricultural system » (ibid.): being ecologically resilient, socially just and economically viable.

Alnarp's farm, as seen in Figure 2, is surrounded by vast conventionally farmed fields and barns belonging to Alnarp's property. It is legally standing on Alnarp's territorial property, renting the land and tying itself to the university. A set of smaller farm houses and barns, also owned by SLU, is used for housing, a second-hand store (loppis) and AAF's storage room. It is bordered by 2 roads: a speed road and its cycling path linking Malmö to Lomma (Malmövägen) and a narrower country road turning towards the SLU campus 2km down the road (Sundsvägen). On the other side of Malmövägen, the Öresund nature reserve and the coastal walking path join the harbour of Lomma along the beach. The absence of public transport in this area physically excludes it from its surroundings.

Since the start of the initiative, students from different faculties joined and left the project, helping as volunteers, as was the philosophy of the farm. Having farming sessions open to any volunteers weekly, leaving space for new generations of students to get involved and take over the project. However, seeing the project evolve into a functioning farm, the students had ambitions to make it work as a professional non-profit organization, and proceeded to restructure the organization, which would now include employees, board members, along with an advisory board, and the bigger community gathering students, volunteers and other members. The farming practices used on the farm follow methods which nourish the soil and enhance its microbial activity (Biundo, 2024), doing so by avoiding tilling the soil.

The design of the farm is laid out following market gardening dimensions designed for human proportions rather than heavy machinery. Densely planted vegetable beds are elevated from the ground level and spaced out to allow humans to walk in between. These beds are on both sides of a central alley (view from Figure 3). Perennials and trees are planted, supporting a diversity of ecosystem services while providing food and shelter for the local biodiversity.

The decision to start employing a few dedicated members was to safeguard the stable operation of the growing demand for CSA shares around the locality. Customer bases grew from Alnarp to Lomma, Malmö and Lund, being attracted to supporting local food systems, eating seasonal and organic vegetables, or wanting to support the project. The farm operates on a Community Supported Agriculture (CSA) system, where customers pre-order their share of vegetables for the coming season, securing the financial investments of AAF at the beginning of Spring and agreeing to a trust-based long-term relationship between themselves and farmers. CSA shares and prices can vary each season, as the farm has been expanding, different sizes of vegetable boxes and later flower bouquets were introduced for sale. A weekly Farmer's Market is held at the farm, inviting the public to visit the only local market garden of the municipality.

Over the past years, Alnarp's farm attracted the academic realm to observe more closely the complex system it had grown into. It has gained more recognition within SLU, becoming employed to lead specific crop rotation trial research, and is contributing to resilient food production through hosting farm tours and participating in educational talks and seminars at local, national and international levels. AAF is acting as a catalyst for change from the health of our growing environments to our eating habits regarding seasonality, locality and nutritional value.

Figure 3. Alnarp's agroecology farm, central alley leading into the Market Garden.

THEORETiCAL FRAMEWORK

As this thesis is based on multiple disciplines around landscape uses and systems, a brief description of the main terms used throughout the paper is deemed necessary. Some principles and terms would benefit from further research and nuancing around their multiple meanings. By using concepts of transdisciplinarity to generate tools and study opportunities for multifunctionality in the local landscape, concepts of ecosystem services, foodscapes, agroecology, agroforestry and living labs are explored in this section.

4.1 Transdisciplinarity

Transdisciplinarity, as studied by Nicolescu (2006), was introduced as a new concept in 1972 by Jean Piaget, stating the distinction from multidisciplinarity or interdisciplinarity for being an approach "which should not be limited to recognizing interactions or reciprocity through specialized research, but which will have to identify those connections within a total system without any stable boundaries the disciplines themselves." Transdisciplinary ideals, according to Massari (2021), would mean for "everyone to contribute equally to the analysis and investigation, having the same weight in decision making, and finally by fully satisfying everyone's priorities and bringing positive impacts on all their sectors", implying a crossover between several existing disciplines, which in turn makes them permeable thus easier to explore through a systemic approach and blurring the distinction between both disciplines. I have used the transdisciplinary framework developed by Mitchell et al. (2018) to relate to this research as a guide to evaluating its outcomes, see Figure 4. Using 3 « outcome spaces », the research should improve the overall situation, on an institutional or physical level, while generating knowledge exchanges and flows between disciplines and different parties of the study. This is reinforced by the researcher's role to give equal voice to those parties, in the case of

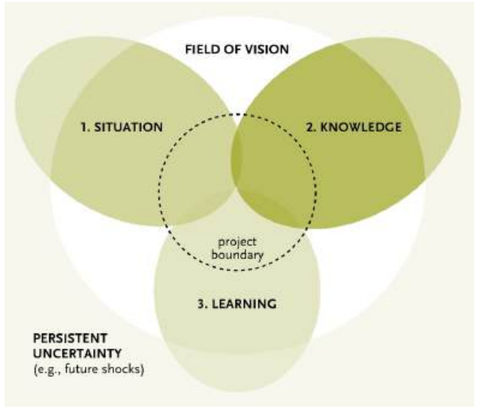


Figure 4. « Conceptual map of the 3 outcome spaces of transdisciplary research embedded within the field of vision of the broader landscapes » (Mitchell et al. 2015).

support mutual learning between themselves and the stakeholders. The emergence of new questions or ideas, and in turn those of creative and innovative solution finding, with the collective contribution aiming at bridging the gaps between complex fields of knowledge. Researchers are still trying to approach transdisciplinarity as a concept which has yet to be defined from its « multidisciplinarity » and « interdisciplinarity » neighbours. This approach has helped me along this thesis to pursue new ways of cultivating stakeholders' participation and collaboration, and aiming to bring out their creativity from the start of the process to the proposed design.

4.2 Multifunctional landscapes

Multifunctionality in landscape, according to Lovell (2022), refers to the ability of an agroecosystem, in urban or peri-urban settings, to offer a wide range of production, ecological and cultural functions to different extents. Multifunctionality in urban planning and landscape design is said to be relevant due to increasing density in urban spaces needing to make room for vegetation, both for the well-being of the residents and the resilience of the city itself (Fors, 2024). However, multifunctionality in agrarian landscapes covers social, biodiversity and health issues in the context of growing food. Exploring multifunctionality, aiming to move landscapes in the agrarian sector beyond a single purpose and for a transition to sustainable food systems (Gliessman 2014), intends to integrate more aspects into its matrix without compromising the main function. In Balasubramanian's (2015) analysis of current land use categories of agricultural land (in section 3 of Table 1), farmland, cropland, rangeland and forest land belong to the Rural Landuse categories. Meaning those land uses could only be present individually on a surface of land. Multifunctional categories are yet to be defined. In theory, they exist, but have not been legally recognized as such.

Those different approaches are nevertheless aiming at common objectives, as a reaction to a loss of ecosystem services, to bring multiple stakeholders and their diverging interests into a simultaneous landscape benefiting each to a certain extent. Halland et al (2011) developed a framework for multifunctionality on farmland, considering aspects such as recreation, aesthetics, ecosystem services and wildlife preservation, becoming functional parts of the farming system and satisfying those functions to different degrees. I have used the different important groups of people from Lovell et al.'s (2021) study around multifunctionality in a locality as guides for choosing stakeholders in my research (see Figure 5). They described four 'audience' groups with strong influence on the decision making: Policy makers, regional planners, academics and agency personnel (referring to the middle person between farmers and landowners). They later define 'stakeholders' as a different group which experiences the results of the decision-making, consisting of landowners, farmers and the general affected public. I will merge the 'audience' and 'stakeholder' groups, considering them all equally valuable in the decision-making process of my study.

Figure 5. Audience and Stakeholder groups in a mutlifunctional research (Lovell et al. 2021).

Land use categories	1. Built-Up Land-Urban	2. Rural Built-Up	3. Rural Agricultural	4. Vegetation/Forest and others	5. Transportation and Communication	6. Water bodies	7. Wastelands	8. Opens spaces & others
Sub categories	A Residential : High rise apartments. Medium rise apartments. Low rise apartments. Low rise row houses. Low rise Group houses. Slums. : B. Commercial : Retail & General business. Community Centre. Wholesale & Ware housing. Major Shopping Centres. Major Hotels. Parking Area. Market Yards. C. Exhibition halls. Petrol bunks. Banks. C. Industrial : Service Industry. Light industry. Extensive Industry. Heavy Industry. Hazarders Industry. D. Recreational : Parks/Gardens. Stadium. Playground. Race Course. Zoo. Botanical Garden. Historical Monument. Planetarium. Major Fountain Hall. Swimming Pool. Major Cinema Theatres. E. Publi & Semi Public : Major Education Institute. Cantonment. Major Centre. Religious Places. Major Government Offices. Petrol filling Stations. Police Station. Fire Station. Circuit House. Electric Substation. Jail. Water treatment Plant. Dumping Ground. Electric Power Plant. Sewage treatment Plant.	Huts and hamlets. Multistoried buildings. Godowns. Community Halls. Cultural Complex. Temples. Library Schools.	Crop Land. Fallow Land. Plantation.	Dense Forest. Open Forest. Plantations. Mangroves. Grazing land	Bus Terminus. Railway Station. Airport. Harbour. Bridges. Flyovers. Roads. Railway lines. Truck Terminus. Breakwaters. Post Offices. Telephone Exchange. Telegraph Office. Radio & TV station.	River Canal. Lakes & Ponds. Reservoirs Tanks. Cooling Ponds. Abandoned Quarries with water.	Marshy. Mudflats. Water logged. Salt pans. Wetland : Marshy. Mudflats. Water logged. Salt pans.	Quarry. Brick Kilns. Dam. Coral Reef. Reclaimed land. Vacant land

Table 1. Land use classifications and categories described by Balasubramanian (2015).

4.3 Ecosystem services

As a tangent to biological diversity, which results in a set of ecosystem services such as pollination, natural enemies and weed suppression, ecosystem services, as a broader term, represent the umbrella under which complex interactions within the ecosystem are defined and evaluated individually. These interactions can be between living organisms (plants, humans, trees, insects, animals, fungi, bacteria) and/or the physical environment in its biotopes (riparian, wetland, woodland, meadow, sea coast, etc.) and/or between water, air, and soil elements. European institutions have developed a human-centered definition of the term 'ecosystem services' more as a natural by-product and service to our exploitation and use (European Investment Bank, 2023). Ecosystem services are still valued according to the financial benefits of the expected harvested product, e.g. timber, crops and honey or human services such as recreation, climate change mitigation and carbon sequestration (Gomes Lopes et al. 2015). However, amongst disagreeing authors, Boyd and Banzhaf (2007) have opted to clarify the potential aspects of monetizing nature to define ecosystem services as follows:

"The ecological components directly consumed or enjoyed to produce human well-being."

Which I will choose to refer to in this paper.

4.4 Foodscapes

The word foodscape is defined beyond the two terms composing it: food and landscape. It implies a specific land cover type related to food production, in this case, agricultural land, which shapes and configures our countryside landscapes of today. I will refer to the definition of Adema (2007) of the word foodscape as:

"A marriage between food and landscape, both the conceptual notion (idea) of landscape and actual, physical landscapes."

Its principle has expanded since its first appearance in academic literature in 1995, has evolved and been utilized to refer to agricultural and planning academic disciplines, while no studies have particularly framed its use in quantitative measures (Vonthron et al. 2020). In the case of landscape architecture studies, I will use the term foodscape to refer to the agricultural land covers of a landscape which have been culturally, politically and socially shaped by its past individuals, revealing ways these features physically appear, bringing a perspective on the landscape.

4.5 Agroecology and Agroforestry

Agroecology as a word brings together the agricultural practices into an ecologically, socially and economically viable system, much wider than the sole sphere of agriculture. It is an interdisciplinary practice which aims to bring a holistic perspective to the act of farming, according to Gliessman (2014). Agroecology is inspired by traditional farming methods where humans farm in a living system of which they are a part and contribute to (Altieri, 1996). The practice itself goes against the use of synthetic fertilizers, pesticides, and other chemicals, aiming to reduce external inputs into the farming system. On the contrary, Escalera-Reyes & al. (2020) underlined the importance of conserving genetic resources and local varieties in one agro-ecosystem. This practice is generally used for small-scale farming, and builds on a complex network of interactions between species in a spatial configuration such as intercropping, wind shelter, pollinator flower strips, compost area and more. These aim to integrate the surrounding environment into the farming system and offer numerous benefits for the wildlife and biodiversity preservation of one region while maintaining soil structure and fertility. The interaction goes beyond the farming system to reach the local community, aiming to create a real connection between people and place - this can be done in many ways, from having open farming sessions, farmers' market at the farm, recurring events and knowledge sharing activities, etc. Over a long period of time, as the system grows more complex and interdependent, the need for heavy machinery and pesticide use is reduced.

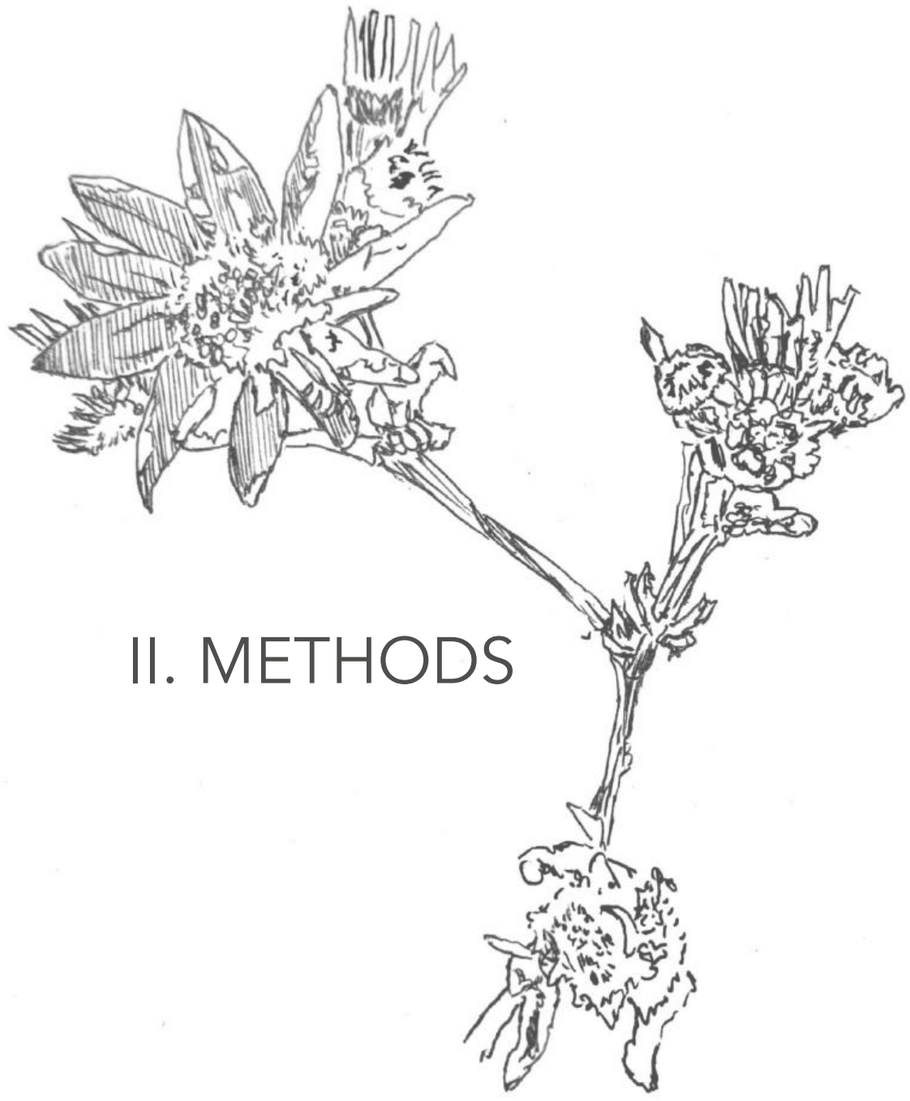
Agroforestry falls under the same principles as Agroecology but specifically consists of a farming practice where woody perennials are purposefully used on the same land management unit as agricultural crops and/or animals, for ecological, social and economic purposes (Gordon et al., 2018; Van Noordwijk, 2020). In addition to annual planting and spatial configuration of agroecosystems, woody perennials mostly bring multiple benefits to the ecosystem surrounding them, as they provide shade and more humid conditions for the annual crops planted underneath. With their roots, the trees bring up water sources from lower grounds and prevent soil erosion on sloped terrain.

The concept of agroecology is used as a way of showing beneficial symbiosis between the environment and humans by working with it rather than against it, and brings endless possibilities to find solutions that work with nature over a longer period of time. As a result, it contributes to a more resilient food-producing system which doesn't feed the world at the expense of biological diversity but instead brings together a close community of farmers and local consumers. I have worked on these concepts while working on this thesis as the main philosophy for integrating multifunctional uses in the proposal when exchanging with stakeholders.

4.6 Living Laboratories

Living laboratories, or living labs, have been evolving over the last few decades as a practice and place-based system. Ballon & Schuurman (2015) have theorized Living Labs as being the crossover between information and communication technologies and innovations, stimulating the participation of its users, actively learning and developing a sense of place in relation to the Living Lab. Bergquist et al. (2019) have used the term living laboratories as an inherent component of SLU university campuses for researchers, students, and the people using these spaces for other functions, e.g. recreational spaces.

I will refer to Living Lab approaches as a combination of Ballon & Schuurman and Bergquist et al.'s developed definitions as a tool for research in an academic setting. By enhancing the visions of Living Labs on university campuses as a philosophy for opening research grounds to other functions and uses, these places promote interdisciplinary innovations in real-life contexts with a holistic approach, which is system-based.



II. METHODS

1. Approach & framework

This research uses spatial design as an exploratory and participatory tool to address land-use challenges related to modern agriculture. A set of complementary qualitative methods was applied through a phased yet iterative research process beginning in late winter 2025 (see Figure 7). Methods varied in duration and intensity depending on the stage of the research, combining short-term data collection with longer-term engagement (see Figure 6).

The research began with a Literature Study (LS) and an Observational Field Study (OFS) of the site to establish contextual knowledge of the study area. These methods provided a basis for understanding the historical evolution of the locality, its spatial structures, and socio-environmental dynamics. In parallel, on-farm Participant Observation (PO) was ongoing at Alnarp's farm and continued over the year, intensifying over the summer (peak farming season). This long-term engagement enabled a deeper connection to the site and its community through active involvement in a local farming initiative, allowing insights to develop over time. The extended duration of OFS and PO contributed significantly to understanding how Alnarp's farm functions in its current form and what conditions are essential to support its future.

During spring, Semi-Structured Interviews (SSI) were conducted in parallel with PO to explore how different groups of actors perceive, influence, and experience the landscape. These interviews incorporated social and emotional dimensions of place, which are essential for place-based planning (Nohl, 2001). Stakeholders were informed of their role within the research process and were invited to engage in follow-up and review stages of the design proposal (see Table 2, p.49). Participants could choose to remain anonymous. The selection of methods emphasised context-specific and qualitative approaches, allowing past and present landscape dynamics to inform future-oriented envisioning.

In early summer, insights derived from SSI and PO were opened to the public at Alnarp's Farm during a Participative Design Workshop (PDW). The workshop facilitated a co-creative process in which participants collectively explored possibilities for improving local food production systems.

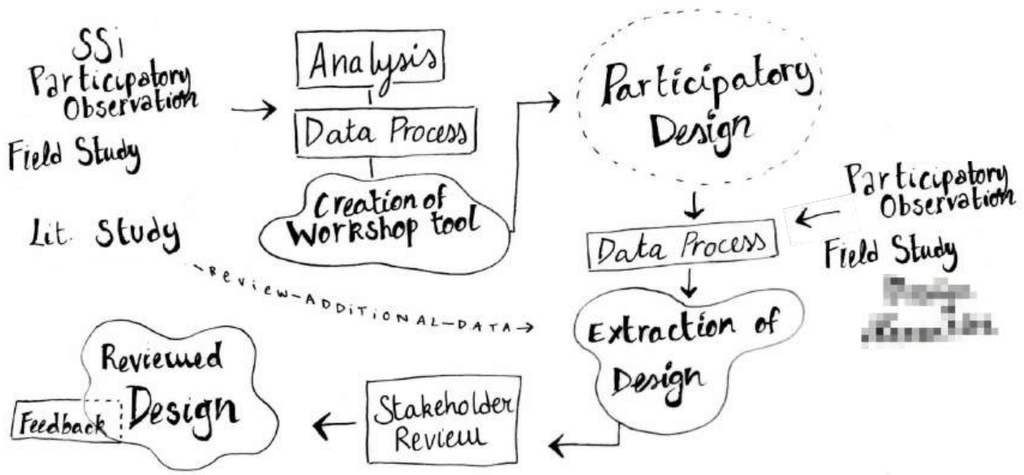


Figure 6. Diagram of how the methods have been integrated as part of an iterative process along the study. The data collected from the stakeholders during the first stage methods became the founding tool for the participatory design workshop. The data collected then was returned to the first stage methods, engaging stakeholders along the process to have more input. The data collection of the reviewed design marked the end of the back and forth dialogue, otherwise the process goes along this cycle number of times leading to more accurate results.

Outcomes from the PDW, combined with continued PO and OFS during the summer period, were synthesised through a Design Narrative (DN) resulting in a design proposal. This process led to the development of four key Narratives based indicators of landscape multifunctionality guiding the proposal: accessibility and landscape connectivity, educational opportunities, nutrient cycling within the farming system, and biological diversity supporting research opportunities.

During autumn, interviewed stakeholders were invited to follow the ongoing co-creation of the design proposal through a dedicated review session (RS). This moment allowed the emerging spatial ideas and narratives to be shared, clarified, and critically reflected upon in relation to the concerns and aspirations expressed earlier in the study.

Overall, this methodological framework promotes openness of discussion and iterative knowledge production through a holistic, participatory approach. By combining observation, stakeholder engagement, and spatial design, the research supports multifunctional planning strategies for peri-urban food systems.

The research methods are individuavlly described in detail in the following sections.

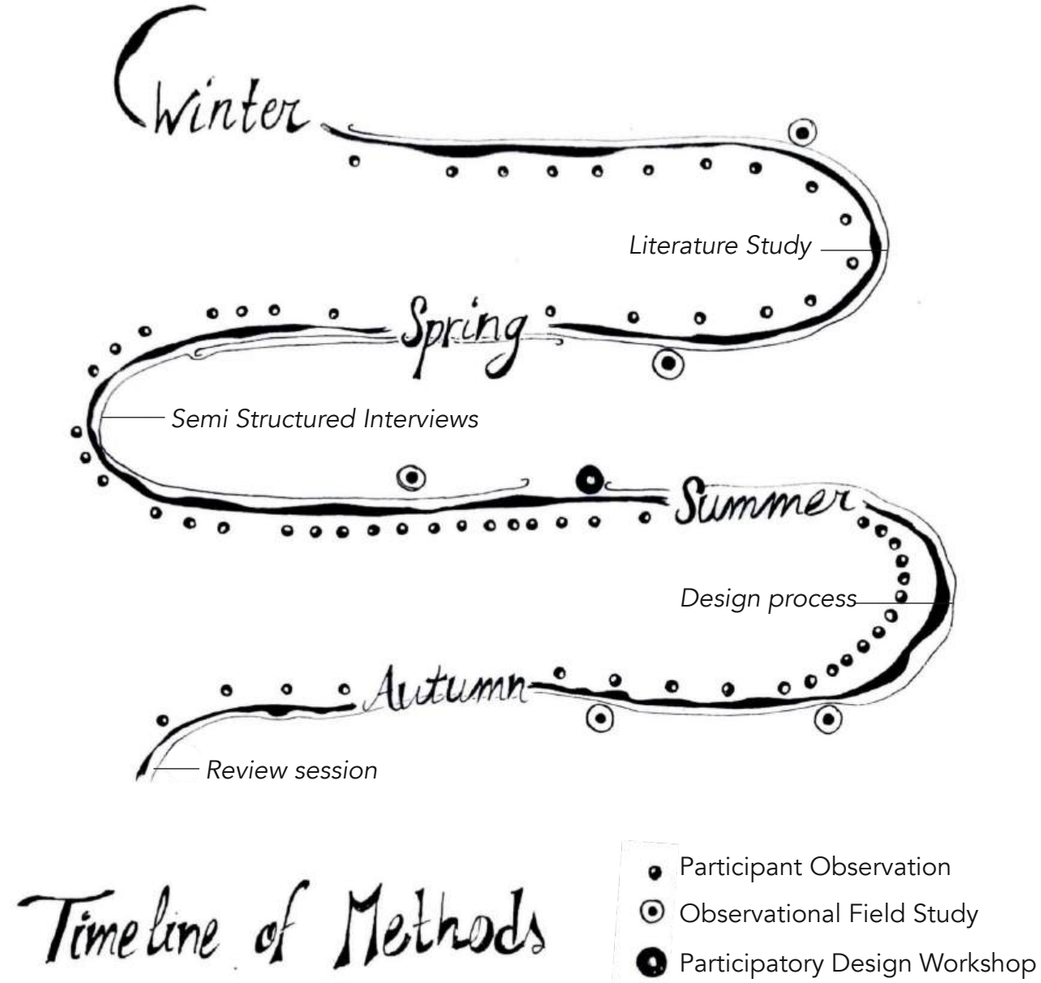


Figure 7. Timeline of Methods used along the study. Part of the methods were used in specific periods of the sudy; starting with the Literature study during Winter, allowing for 11 Semi-structured Interviews to occur throughout Spring, in the Summer for the Design Process to take place, and later in Autumn for a Review session. The other methods, Participant observation at Alnarp's farm, Observational Field study of the site next to the farm, and the Participatory Design Workshop were held at specific dates across the study.

2.2 Literature study

Articles, books and other forms of written reports from academic literature platforms were reviewed during the prior phases of the research. The data obtained from those readings were used to support the decision-making of the Stakeholder choice and clarify the research approach.

I initially started reading about current land use issues to obtain more tangible data on the present state of the world. While this topic felt broad and complex, I narrowed my research down to multifunctional agrarian landscapes and how to use different tools for a qualitative observational study. A historic analysis of Alnarp's campus was deemed necessary for a better understanding of its past as a university-owned land as well as its future development plans, in parallel to its local municipality's development and future plans. When possible, these documents and papers were discussed with the authors to get clearer insight into what is concretely feasible and realistic, outside the written lines.

There is an importance of relating the global crisis to the local landscape this paper would study, exploring through deeper readings related to foodscapes, landscape multifunctionality and past examples of student initiatives related to Alnarp campus, to examine how those can contribute to creating inspiring and inviting spaces close to cities. I then became more interested in how we, as landscape architects, could be more involved in a locality and participate in changing the ways we use land by involving the people who are part of this locality from the start, researching participatory design and transdisciplinary approaches.

2.3 Observational Field Study

Throughout the research and writing process, I made use of the seasonality and temporality of the studied field located next to Alnarp's agroecology farm to explore the different senses of space of different seasons. I considered the seasons to be of major importance when researching the topic, and made the decision to split my thesis writing time in half and spend the rest of my time in person volunteering at the farm, which enabled for a deepened observational opportunity. The total time covering all four seasons of 2025 (from January 2025 to January 2026). Over the year, 5 observational studies took place focusing on the sensory and physical features that occur during these moments. While following an assigned course around the study area each time, my thoughts were attentive to the exterior movements, and I noted down in a logbook, as well as new species observed from one observation to another. Studying a place-based project implies studying it over the weeks, by coming back on a regular basis and repeating this process, which allows for data to be collected and shows evolution over time.

When going outside and walking the same itinerary every time, I focused on depicting the seasonal variations of the place, in this case, around a conventional, organic field of Alnarp's property.

The process of observing was held with the purpose of having a foundation upon which the proposed design would respect and respond to, noticing "what occurs when?" to then be able to take it into account, bringing awareness to the daily extraordinary events of a natural context that seemed, at first, open and plain. As Lenzholzer et al (2013) suggested towards repeated field observation, such activities have been crucial in the design process of any project involving the change of that environment.

These observations were documented through a number of mediums , shown on Figure 6, like audio recordings, films, photos, drawings and objects to form a compilation of photographs, recordings, notes and sketches. This resulted in a site inventory across the spatiality of the field throughout the seasons of one year, of which 10 main plant species observed in the field and along the edges were identified. A non-exhaustive list of insect and bird species showcases the most commonly observed species during

Figure 8. Tools used during the Observational Field Study

those observatory visits. Each season is followed by a description of the main aspects revealed by the observational field study, as well as indirectly through the Participant Observation process, which took place right beside the field, offering a daily peek into its seasonal variations.

2.4 Participant Observation

Participant observation, as developed by De Walt & De Walt (2011), is a form of qualitative data gathering, a multidisciplinary method used mainly in anthropological and social sciences as a

> *"Method in which a researcher takes part in the daily activities, rituals, interactions, and events of a group of people as one of the means of learning the explicit and tacit aspects of their life routines and their culture."*

By engaging in a participant observation study on Alnarp's agroecology farm, I made sure to communicate with the team about their role, acting as the main existing case study for my research. I proceeded to observe to what extent the farm and its users relate to a multifunctional landscape. PO became a way to immerse myself in a new community and take part in their daily activities while actively gathering data from observing and conversing with the community, rather than interviewing (De Walt & al, 1998). By getting closer to the way the farmers organise themselves according to the help given from volunteers, by taking more task responsibilities related to events, I was later able to develop and host my participative design Workshop during the "Summer Festival".

Throughout the season, I showed up to the farm several times per week, ready to spend one or part of the day at the farm helping the team, joining in their lifestyle and routine for the day, and engaging in everyday life interactions with customers, farmers, and volunteers. While observing the different aspects of landscape multifunctionality throughout the day, I used recording tools such as a camera, notebook and tape recorder. Later, the data collected from PO was used to depict an analysis on the farming system at Alnarp's farm and obtain, in

combination with the other methods, 4 key landscape multifunctionality indicators for the design proposal.

2.5 Semi-structured interview

A semi-structured interview (SSI) is an interview taking shape via a talk or walk, qualified by Burgess (1984) as a "conversation with a purpose". It is different from a conventional interviewee in that questions are asked of the interview as open-ended questions towards specific pre-stated topics. The interviewees are invited to share personal experiences related to the locality, physically and emotionally, to how they have felt the dynamics that "shape the invisible landscape" (Nijhuis & de Vries, 2020), bringing insight and potential leads for the future of the research.

Interviewees were selected using a stakeholder-based sampling strategy, focusing on actors with direct or indirect influence on, or lived experience of, the Alnarp landscape, including land management, governance, education, and everyday use. Six target groups were identified based on Lovell et al. (2021): policymakers, agency personnel, regional or municipal planners, academics, landowners, farmers, students, and the general affected public. These groups were chosen to enhance the emergence of diverse perspectives across governance, production, education, land use, and their varying degrees of proximity to the studied site. By allowing connections between stakeholders to emerge organically throughout the research, SSI reached greater depths of relevance. The municipality, landowners, researchers, farmers and students acting in and around the place make for these sub-cultures, influencing the current state of the landscape, therefore intrinsically influencing its present socioeconomic character. SSI allowed for stakeholders from various backgrounds, related to different degrees in landscape architecture, to develop their relationship to the locality using their known approach. In the early stages of the study, 11 qualitative semi-structured interviews were conducted, in person or via Zoom, in the spring. In order to find student voices to reach out to make first contact, I had been in contact with students willing to share information about their ongoing studies at SLU through the UniBuddy platform of the University's official website. In order to get in touch with SLU stakeholders, I started a dialogue with professors in the Landscape Architecture Department, gradually developing ties to other stakeholders from different faculties of the university. Other stakeholders, such as Alnarp's property and Lönnstrop research station managers, were identified from their closer ties to Alnarp's farm. Finally, a representative of Lomma

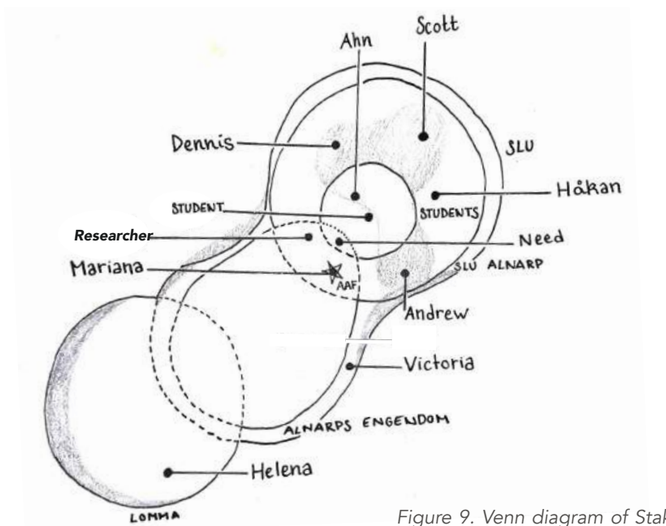


Figure 9. Venn diagram of Stakeholders' proximity to the Alnarp's farm community project

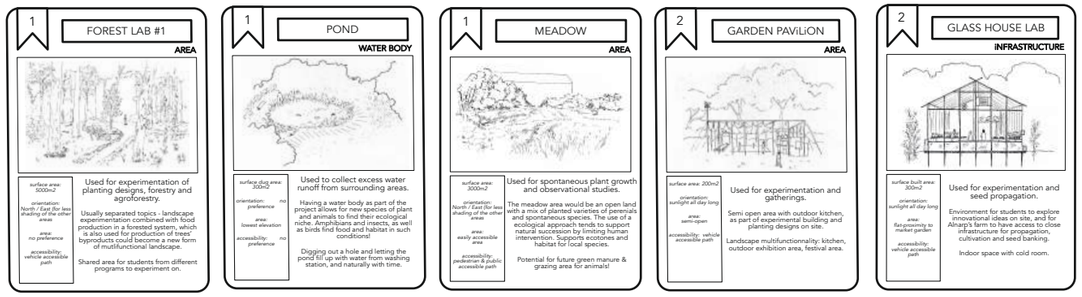


Figure 10. Examples of programs from the Workshop card game as an interpretation of Stakeholders' analysis (all cards are available in bigger size on Annex 1 p.80-81).

municipality was introduced. The use of a Venn diagram (see Figure 9) showing the relative closeness to AAF helped support the sense of local actors taking part in the study. The list of stakeholders can be found in Annex 2, p. 82; the list of oral references can be found on p. 77.

A general interview guide consisted of closed and open-ended questions, see Appendix 1, p. 85. It consisted of gathering general information relating to backgrounds, roles and professions, and other occupations related to the local landscape of Lomma, and Alnarp. Then, as I got more into building a discussion framework, I narrowed down to more specific questions: spatial or temporal planning, relational or quantitative, and the physical scales of our topics of discussion. The setting up of questions was made to understand interviewees' needs as well as spark their interest in the study. The final part of each interview consisted of a visionary discussion around Alnarp's agroecology farm and other student-led initiatives, discussing how those can align with their hopes for change in the near future and their main concern regarding the feasibility of those projections, as well as an agreement on the follow-up and outcome of this study. The interview guide, as part of an iterative process, naturally evolved between each SSI, to focalise on their participative aspect and ways to evolve from the previous SSI.

Supplementary spontaneous interviews also took place with farmers, students and local residents of the space throughout the research process, specifically during on-site observation and participatory observation periods. Semi-structured interviews and spontaneous interviews, though not fully reliable, offer the possibility to explore unprecedented paths of study (Karlsson et al., 2024) and are valuable in this study as the centrality of this thesis revolves around exploration and opportunity-seeking methodology.

The results from interviews were interpreted, along with those from the participant observation, intereest, take aways and how the generated program relates to land use classifications (presented in Table 1). This formed a set of 13 cards (available in Annex 1, p. 80-81), each representing a program, infrastructural or spatial, to be part of the design. The explanatory Table 3 of how those cards were formed can be found in the Result section, p. 51.

Those representations of a physical program would later be used to become the base of the design for the participative Workshop. Each card contains the following information (there to support the decision-making of each participant during the workshop): an estimation of the surface area, an illustrated example of what this program could inspire, preferred orientation, accessibility and land type, as well as brief keywords on how the space would be used. It could happen that several stakeholders had a non-physical impact on the project, without explicitly mentioning a feature for the design. They rather developed a personal view on the

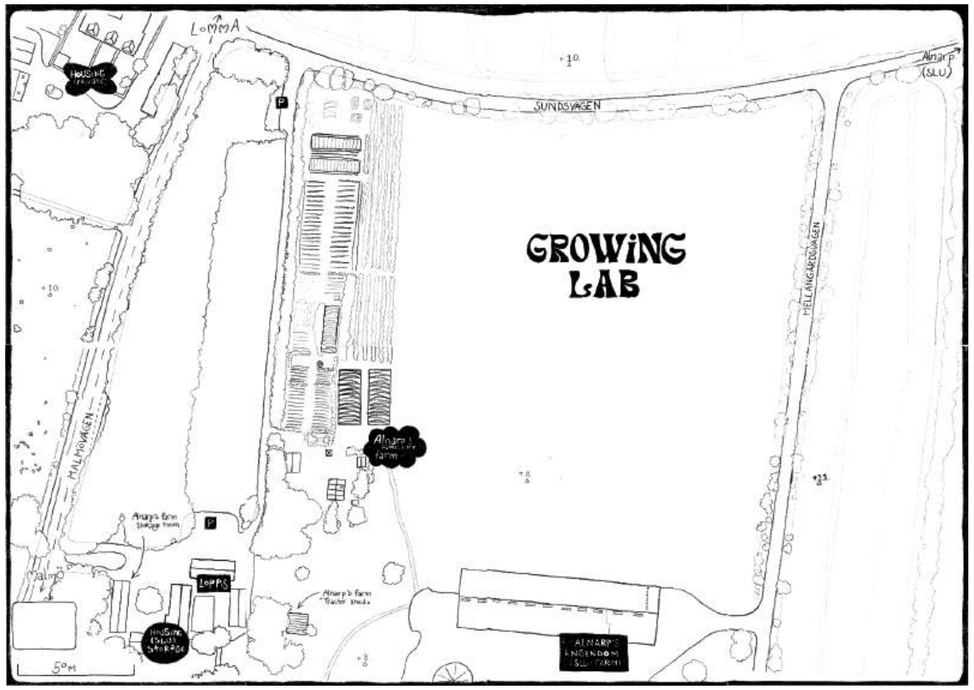


Figure 11. Background annoted map of existing context around the studied field used for the Participatory Design, named for the Workshop « Growing Lab ». Original size : A0

topic and how it would relate to reality, mentioning things and people to take into account at different scales and depths of impact, from organisational to more political perspectives. These results contributed partly to the 4 key landscape multifunctionality indicators for the future design proposal.

Through reiterating the main takeaways from our SSI, a series of questions asking for interviewees' feedback and additional comments was aimed at keeping participation active during the iteration process. Following the ongoing co-creation of the PDW, the review session (RS) focused on getting more insight into the content and direction of the design proposal. After revisiting the discussed key takeaways from the semi-structured interviews, a series of reflective questions was asked, engaging participants to comment on the relevance, feasibility, and implications of the proposed design. This final exchange aimed at keeping participation active throughout the iterative process and to ensure that stakeholders continued to participate in the project.

2.6 Participatory Design Workshop: « Growing Lab »

The transdisciplinarity of methods used led to a constant collection of data throughout the season. After the set of cards was created as a result of the semi-structured interviews and participatory observation, they became an essential tool for the Participative Design Workshop (PDW).

As part of a workshop series held at Alnarp's farm, I had the opportunity to host a workshop during the Summer Festival on June 7th, marking the start of this year's harvest. Centred around visions of future foodscapes and designing together, the growing Lab title came from

This idea that AAF is exploring the possibilities of becoming a Living Lab for agroecological research, and my wish for this project to grow towards opening possibilities of research for a wider audience of students.

In the form of brainstorming, the workshop consisted of open discussion and co-creation of a design that speaks to participants individually and collectively, becoming the central method for the study of my thesis. I had reached out for the participation of local stakeholders who had been interviewed, but the workshop was open to any interested participants. Apart from their willingness to join the study further, as Evans & al. suggested in their selection process, choosing stakeholders for whom the outcomes of the study might be of relevance is an easy way of deciding who might be interested in joining the workshop, and asking known stakeholders with diverging points of view to participate in leading the discussions.

As briefly shown in Figure 6 p. 28, the material used for this workshop was created from the results of the interviews, observations and emerging ideas I had collected throughout spring and part of summer. The card series, each depicting a specific program along with its optimal surface area and a small description of the preferences of use, supported the decision-making of each participant.

The participative workshop hosted 17 participants. It was first presented with an introduction to the site of study along with an explanation of the research and what participative design means in this context, along with the intended use of the material collected, which occurred later in the Summer The participation of such workshops has been studied to prove that simply by creating a space for these exchanges of thoughts and vision to occur is enough to encourage realistic and optimist solutions, while stimulating actions within local stakeholders (Plieninger et al., 2013). Participants were then asked to share some thoughts and aspirations for bettering the local food system, what they wish for their local farmers to produce in terms of goods and services, and then pick a card and assign a location on the empty map of the current state. As more cards were placed, some discussions over the overall coherence picked up and reiterations were made along the exercise. Reflecting continuously through the process of finding common grounds, thinking about potential solutions, individually and collectively, with the means to simply explore them, was the aim of the workshop.

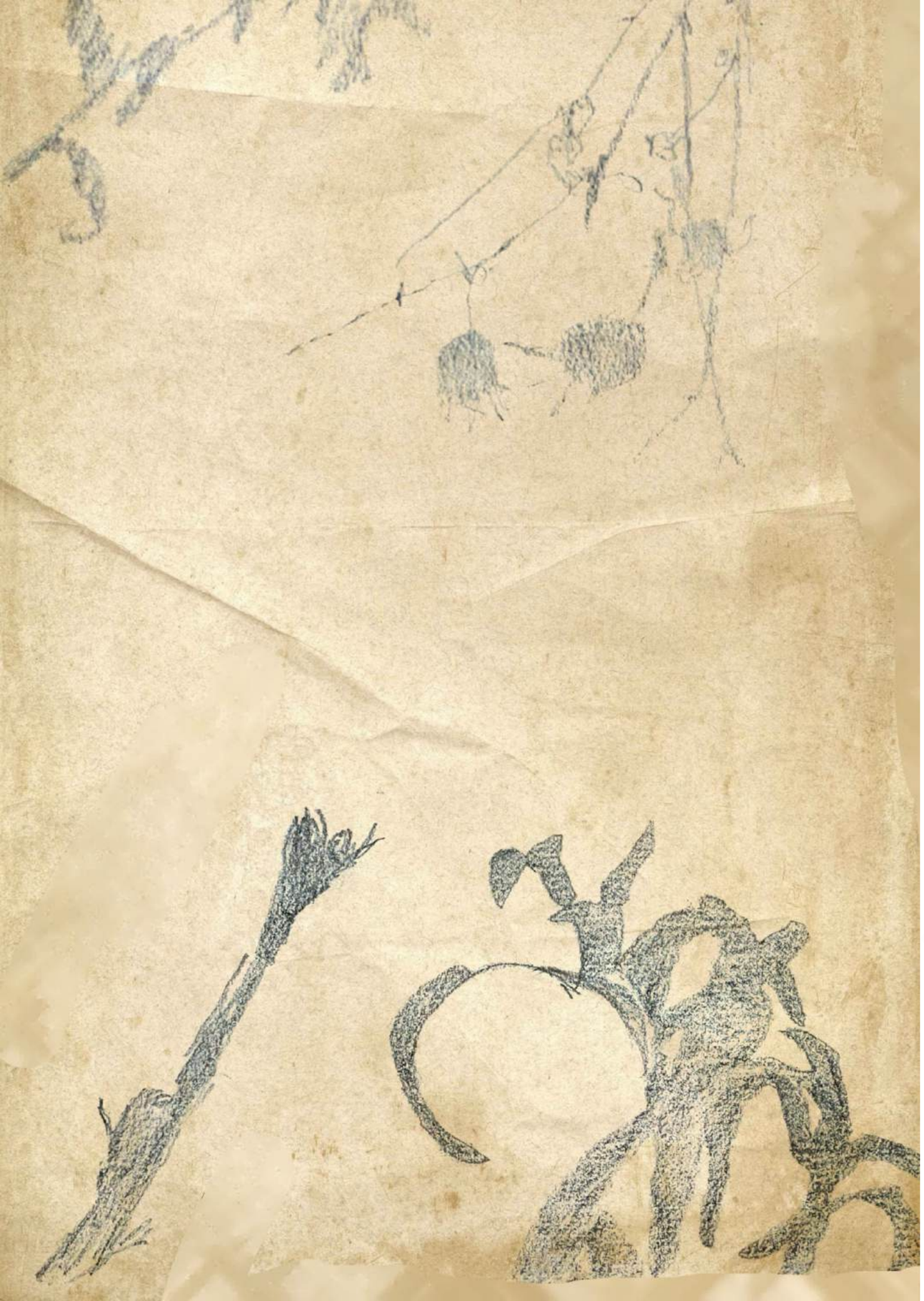
The targeted groups for this study were students volunteering and farmers working at the farm, as well as actors around the municipality, to share and inspire more knowledge from their experience. The customers and visitors of the farm are also a suggested target group, as apart from decision makers, Luz (2000) noted in a participative design study that public awareness is to be considered an equally important factor to affect the future success of the proposed design. The workshop, as it took place during a public event at the farm, was inviting people to spend more time at the farm (be it recreational or professional), including families, young adults, and elderly people from around the locality, with the aim of arriving at a consensus about a common vision.

As the Workshop ended and the results were processed, the participant observation on the farm increased over the summer, and more ideas and wishes were expressed. Those have been integrated into the Design after the results from the workshop were set; their placement was made through an open dialogue for each proposal, followed by my interpretation in terms of placement. These results, lastly, contributed to developing the 4 key landscape multifunctionality indicators for the future design proposal.

2.7 Design Narrative

A design narrative (DN) approach was used to process the main takeaways from the previous methods and create 4 narratives, facilitating the understanding of the Design proposal. As many events and interactions occurred during a design study, the use of DN allows, as mentioned by Trocchianesi & Raffaella (2023), to generate a vision, motivations, and proposals through storytelling. The narratives allow for different uses and user groups to find specificity in the diversity of emerging programs, putting light on the multifunctionality of the proposed design.

III. RESULTS



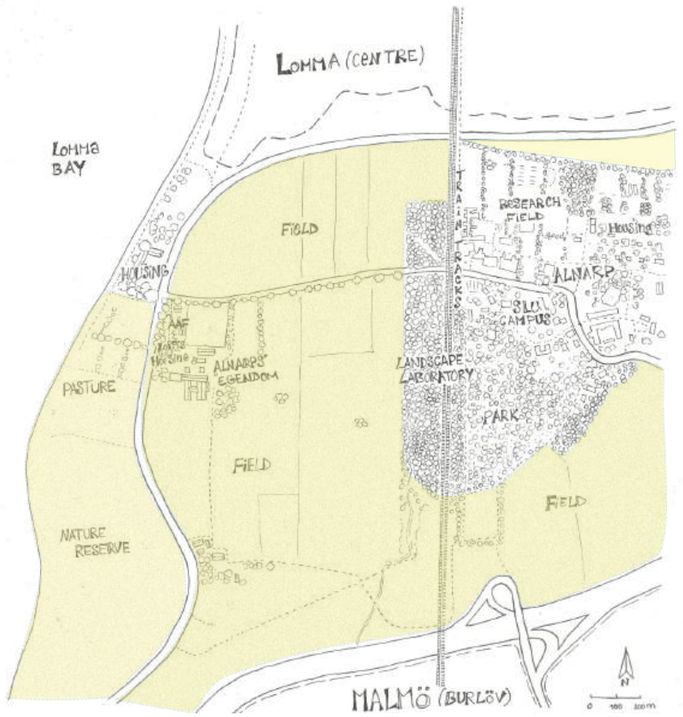


Figure 12. Locations of Alnarp's property, owned by Akademiska hus and SLU in Lomma municipality

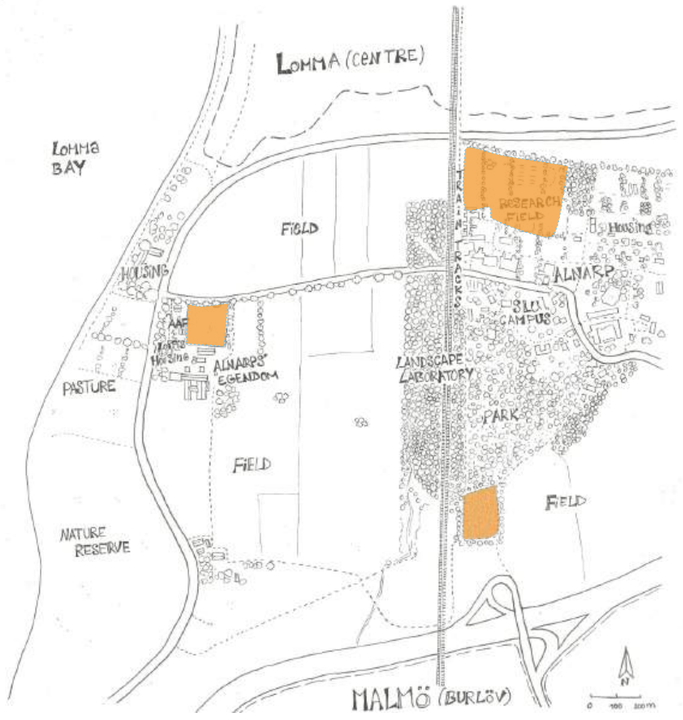


Figure 13. Locations organic plots (in orange) used by Lönnstorp Research Station for leading research

SiTE STUDY

1.1 Current status : Research

The site is currently an agricultural field of almost 4 hectares on land that has been dedicated to research and organic crop production for over 3 decades. It is surrounded by conventional farming fields from all sides except for the Western edge, which is Alnarp's agroecology Farm. These agricultural fields in Alnarp, though labeled as agricultural land, represent 450 hectares and are primarily owned by the university, as an official governmental body, for research infrastructure. For Victoria Thuillier, agricultural manager at the University's department of Estates & Management, those fields are made available to local researchers and research stations. They are represented in yellow on Figure 12, surrounding the main Alnarp campus, with more fields and forests spread out across the region and the country (Thuillier, 2025, SSI). The pastural land dedicated to grazing on the nature reserve along the coast is managed organically. However, in the fields, during times when no research contracts between Alnarp's property and research stations are established, conventional mainstream farming methods are perpetuated to « facilitate different types of research » (Thuillier, 2025, SSI). The crop rotation on Alnarp's property is sugar beet, spring wheat or malting barley, winter rapeseed, and then winter wheat again (Alnarps Egendom: Medarbetarwebben slu.se).

A semi-structured interview with a researcher and station manager at SLU's department of biosystems & technology, who is also in charge of the local Lönnstorp Research station, brought more insight into the current use of the land. There are a few fields in Alnarp rented by the Lönnstorp Research Station with different contract agreements, and 18 hectares of their field are managed using organic production, shown in orange in Figure 13. These fields are spread out across Alnarp's property around the campus, of which 3.8 hectares make up my studied field. The choice of location for this project was due to Alnarp's agroecology farm already being located on part of this field (0.8 ha) since 2022. The reason behind this location was explained by the lower research opportunities and transparency in this field:

> "It's very close to the trees, which is why we considered that area the least valuable for our purposes. For experiments, we prefer locations more in the middle of the fields, as edge areas tend to attract more birds and other disturbances."
>
> (Lönnstorp Research Station manager, 2025, SSI)

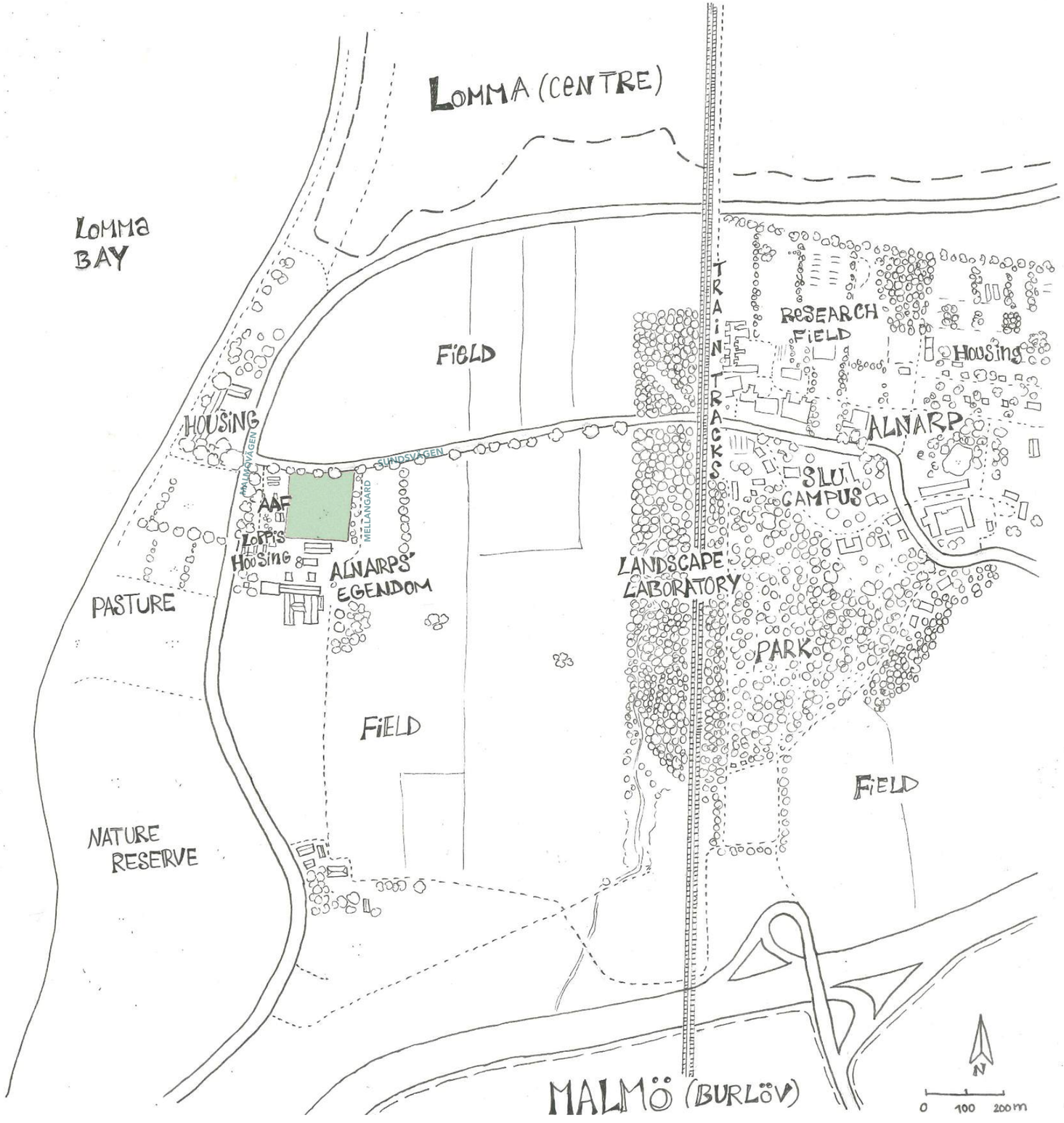
Therefore, research mainly needed to be done within conventionally managed fields to get as little influence from outside factors as possible, to be replicated across conventional farming systems. This meant that AAF already had ecological benefits to starting an agroecologically managed farm, and so could future initiatives aimed at exploring research within organic landscapes. It also meant that a future multifunctional project would need to include research facilities and be available to produce valuable knowledge from the system it would cultivate. For Victoria Thuillier (2025, SSI), this would allow for more research opportunities for comparative studies between different agricultural systems and longer time-scale experiments.

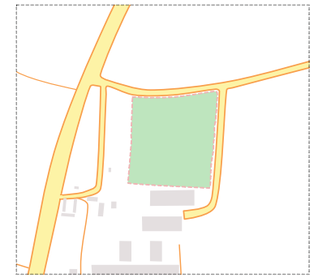
1.2 Site inventory

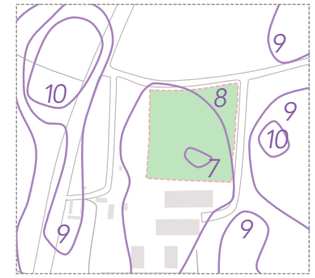
The area is accessible by roads from South (Malmö) and North (Lomma) through Malmövägen, and East (Alnarp campus) through Sundsvägen. Surrounded by these roads, along with a smaller non-paved road parallel to Malmövägen and a dead-end road, Mellangard, leading to Alnarp's property buildings. The field benefits from having gates at each corner, although some are not maintained in an accessible way. Others are no longer fenced, letting in rabbits and other animals enter the area. There is no fence on the south side along Alnarp's property barn.
Climate and wind-wise, from the West side, a tall and long windproof poplar tree plantation prevents the sea water sprayings and gusts of wind from reaching the agricultural fields. This also means the

afternoon sun is partly falling behind the poplars, reducing the amount of sunlight hitting the field in the summer when leaves block out the light. The Southern barn, as well as the Northern row of chestnuts and berry bushes, also act as wind shelters, but do not reduce the wind intensity when North-East and Easterly winds rush down the vast surroundings of flat fields. The row of vegetation along Sundsvägen acts as an important corridor for biodiversity, a habitat for bird nesting and rabbits, berries for winter food, and other organic materials used by insects. Some traces of old pasture land appear with the presence of a specific post pasture weed species, "couchgrass" or *elymus repens*, a very tough, shiny grass creating strong webs of thick white roots. The couchgrass appears to be a problem for both the organic field and Alnarp's farm. While weeding is done frequently, the root system still manages to survive and take over the crops. Overall, the landscape's aesthetic quality is high throughout spring and summer, as the fresh vegetation surrounding the field greens and flowers. Because of the organic management practices, the field of oats evokes a meadow in summer, as flowers of different heights and textures grow between the gradually goldening oat grasses (see Figure 16).

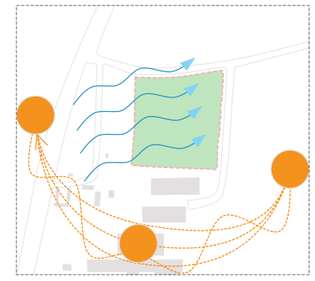
As I observed the evolving seasons through written notes and on-site sketches, some repetitive patterns emerged and resulted in the following chart, Figure 15. Most commonly observed species of birds and insects are listed, along with pictures, and quotes from the same moment are written down to capture the specificity of each observation. Seasonal factual data (average sunlight hours, snow and rainfalls, mean temperature) of each month helps understand the connection of the growing season according to the local climate, along with information sheets for the 10 most observed plant and bush species. The four texts under the seasonal diagram resonate with all the observations made throughout each season, depicting the connection to the vegetation, life rhythm, and the farmers.




CiRCULATiON



TOPOGRAPHY


WiND & SUN


EXiSTiNG TREES

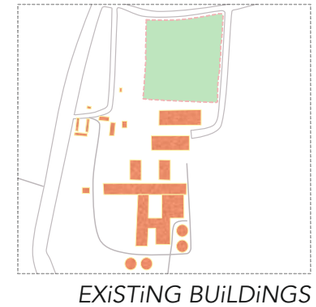

EXiSTiNG BUiLDiNGS

Figure 14. Landscape analysis of the studied site in relation to the existing circulation, topography, prevailing winds and sun course, existing trees and buildings. Source : lantmateriet.se

« I found myself discovering new perspectives across the bare field » - 12th February

« The sun makes its way through the afternoon » - 5th March

« Gentle clouds in warming air » 20th May

« Everything has changed, the research patches of wild oats are visible » - 1st July

« Stepping onto the fields the soil is compacted » - 1st July

«Flying red admiral, loud crickets, field penny cress, chamomille and poppies » - 1st July

« Whistling wind across wide open skies » - 12th February

« Near the edge zones, I can hear the pheasants, see the rabbits » 1st July

« Stones & dried matter, first observation in winter » - 12th February (2025)

« Berries are ripe, popping out in the scenery » -1st December (2025)

« Everything changed again, this time feeling familiar » -1st December

Field-Speedwell
« Veronica agrestis »

Height:	5-15 cm
Flowering period:	April-November
Fruiting period:	May-October
Light needs:	Light loving
Moisture needs:	mesophyte

Rosa Rubiginosa
« Sweet briar »

Height:	100-250 cm
Flowering period:	June-July
Fruiting period:	August-Sept.
Light needs:	Light lover
Moisture needs:	Meso-xerohpyte
Growth form:	Archy shrub, Thorny stems

Sambucus nigra
« Elderberry »

Height:	300-700 cm
Flowering period:	June
Fruiting period:	August-Sep.
Light needs:	Part shade lover
Moisture needs:	Meso-hydrophyte
Growth form:	Small tree, Spreading crown

Crataegus spinosa
« Hawthorn »

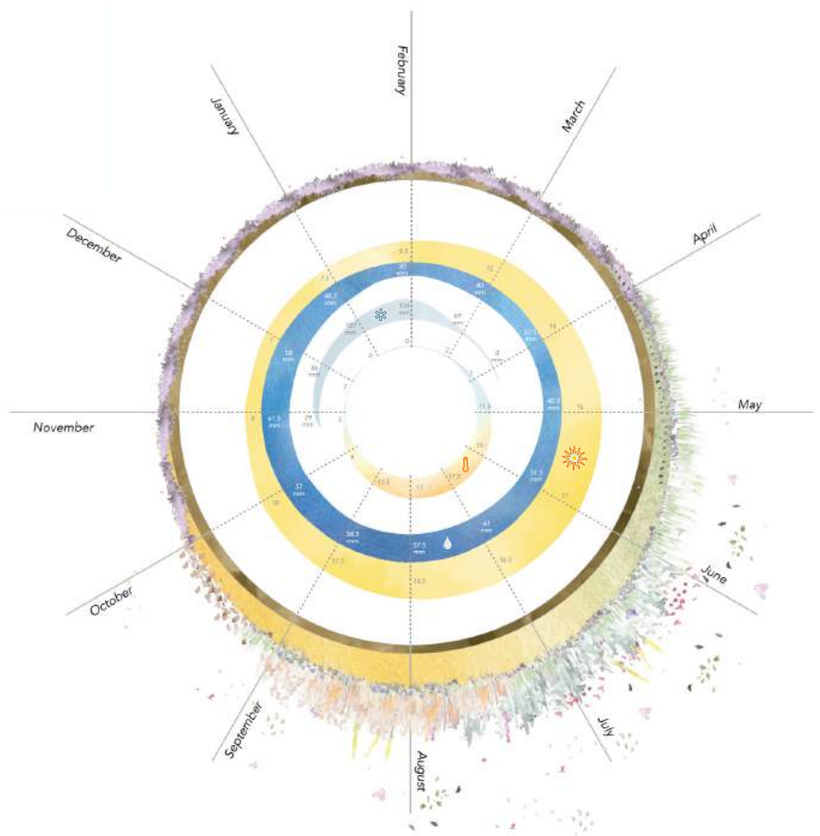
Height:	300-600 cm
Flowering period:	May
Fruiting period:	September-Oct.
Light needs:	Light loving
Moisture needs:	Meso-xerophyte
Growth form:	Large shrub, Thorny crown

Matricaria chamomilla
« Chamomile»

Height:	15-40 cm
Flowering period:	June-August
Fruiting period:	July-September
Light needs:	Light loving
Moisture needs:	Meso-xerophyte

Insect species : bush cricket, bumblebee, western honeybee, common field grasshopper, common blue, cabbage white, meadow brown, red admiral butterflies, dragonfly

Bird species : black-headed gull, bird of prey, common blackbird, jackdaw, carrion crow, european blue tit, magpie, wood pigeon, ring necked pheasant, barn swallow, white wagtail



Ligustrum vulgare
« European privet»

Height:	100-300 cm
Flowering period:	June-July
Fruiting period:	August-October
Light needs:	Part shade lover
Moisture needs:	Mesophyte

Cornus sericea
« Red-osier dogwood»

Height:	150-400 cm
Flowering period:	May-June
Fruiting period:	July-September
Light needs:	Partial light loving
Moisture needs:	Hydro-mesophyte

Thlaspi arvense
« Field penny cress »

Height:	20-50 cm
Flowering period:	April-June
Fruiting period:	May-July
Light needs:	Light shade lover
Moisture needs:	Mesophyte

Papaver rhoeas
« Poppy»

Height:	30-70 cm
Flowering period:	June-August
Fruiting period:	July-September
Light needs:	Light lover
Moisture needs:	Xero-mesophyte

Euphorbia serrata
« Serrata spurge»

Height:	20-50 cm
Flowering period:	June-July
Fruiting period:	July-August
Light needs:	Light loving
Moisture needs:	Xero-mesophyte
Growth form:	Bushy herb

Winter - The wind is strong here. Some seedpods and berries hold onto branches throughout winter. Rabbits run around trying to escape. There is not much perceived change across winter. The occasional snowfall changzs the tones and atmosphere, which quickly melts with the mild wind and proximity to the sea. A murder of crows flies above the bare ploughed field, stones surface and appear colourful amongst the earthy and bland colours of the landscape. The field is flat yet slightly tilted, revealing a stagnant water dip in the middle of the field, freezing during colder periods. Jackdaws stand around this wet area. Towards the end of the winter season, the first blackbird is spotted on the AAF edge as a soft, mild wind blows a feeling of change. By then, the sandy tones of vegetation already feel warmer as daylight slowly increases again.

Spring - This is the time for constant change. At last, the berries have all dried up and left space for buds to form. The first flowers make their way out, grass becomes greener and taller, buds grow, and crisp tiny leaves burst out in weeks which feel like days. Light increases rapidly (from 12h in March to 17h of daylight in June) and energises the growth of weeds, crops and flowers. Field layer species are quickly overtaken by the shooting wild oat, bugs and bees find their way out again. The air starts filling with pollen and buzzing with insects and birds; they feed again. Days can also be surprisingly cold, although constantly humid here, letting out this grassy smell from the field. Geese fly back northwards, and seagulls are loud again. There is a substantial amount of work to do in the field: pest management and weeding pressure increase.

Summer - The sun goes up, the wild oat golden, vegetables ripen and, all is lush. Weeds flower and start preparing their seeds. Vibrant tones of green contrast with the colourful flowers and butterflies. Weeds take over the crops, which reach 1.2m tall, and it becomes harder to grasp an overview of the field. Big white clouds float above the field and threaten to pour down onto it. Eventually, rain and rainbows occur during the season, as the wind blows the clouds towards the east. Days and nights are spent at the farm- getting lost in time and never feeling like leaving, it's the time to be outside with the world, alive. The energy went up and must come down to a calmer tempo, and the soil feels drained from having supported all this mass of vegetation. Wild oats seeds are heavy, ready for harvest. Farmer's energies are also drained and slow down as days get shorter.

Autumn - Time for the harvest of wild oats. Leaves dry gradually, exposing a beautiful gradient of warm colours from burgundy to orange. Temperatures drop fast, as if the weather were forcing a general shutdown of life. Vivacious weeds like couchgrass still manage to grow a little, but fallen leaves slowly take over the ground cover. Muddy and cold, the soil darkens, covering the seeds for the harsh months to come. Wind picks up through the stripped branches, and a grey overcast weather pushes life to wind down and rest. The field is eventually ploughed after harvest, serving a last feast to the crows and seagulls. Colours fade away, and time comes for the white and red berries to pop out of the bushes. The dip fills with water again, and the rocks appear colourful again. The farmer is drained and tired from the harvests, almost relieved that the production, like seasons, must come to an end.

« The farm is fenced and lush, loud tractor noises behind » - 24th August

« Golden oats browning in the field » - 24th August

« The tractor tracks open up the field, I see a cross-section » - 24th August

Figure 15. Site inventory from the field observations accross the seasons. Indications of main observed presence of plants, birds and insects along with photographs and deescritpions of the site during the visits. Quotes are taken from the notebook data. Information for average snowfall, temperature, rainfall and sunlight hours per month from October 2024 to September 2025. Sources: https://www.smhi.se/en, https://www.timeanddate.com/sun/sweden/malmo, https://www.naturvardsverket.se/

Figure 16. Section of the study field, planted with wild oats this season using organic methods while research plots are spread out on different smaller patches. The presence of wild flowers and tall grass give the field a meadow allure in summer. Not to scale.

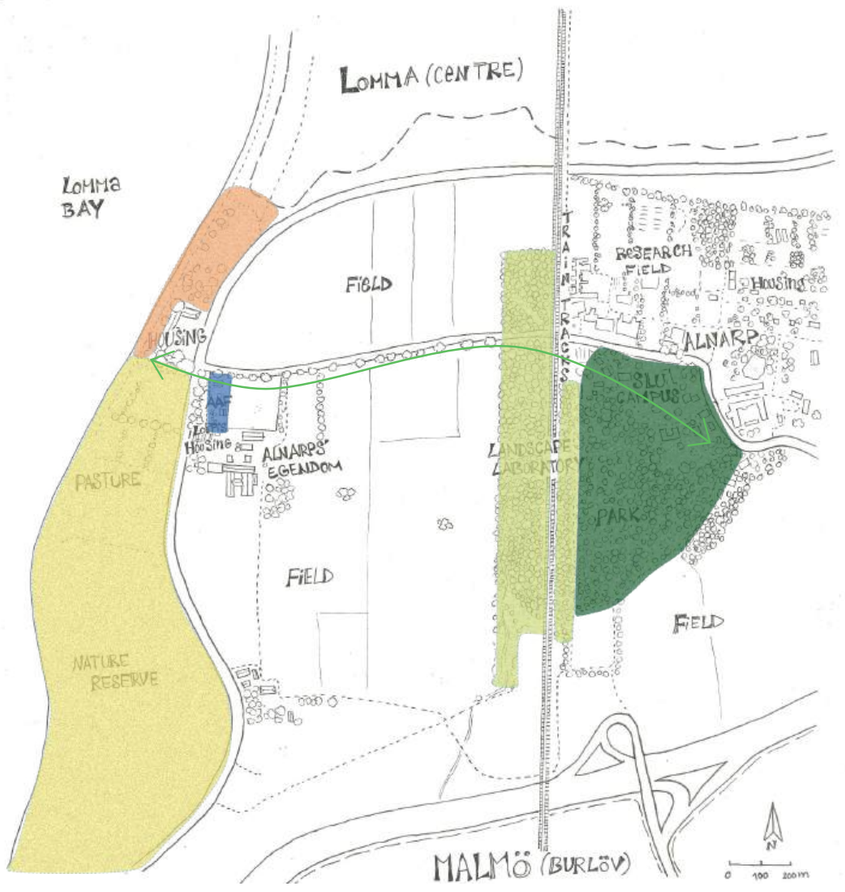


Figure 17. Around the project site: from the pastoral seaside natural reserve (yellow) and Öresundsparken (orange) to the Landscape Laboratory (light green) and Alnarp's park (dark green) through Sundsvägen and Alnarp's farm (blue)

1.3 Environment & character

As a typical Scanian landscape, the site is located on flat arable land (limestone and sandstone layers), with an elevation difference of 1 meter between its lowest (+8m) and highest points (+9m). Along the south edge of the field stands Alnarp's property's main infrastructures: barns, silos, and brooder house, which create an industrial farming environment. Access to Alnarp's property is created by a small road along the eastern side of the site, partly hidden behind a row of bushes and trees. A smaller set of farmhouses and a smaller barn are located on the south-west edge of the site, while Alnarp's agroecology Farm borders the West edge (in blue on Figure 17). The Öresund sea shapes the Lomma bay 300m away from this field westwards; however, the field is sheltered from west prevailing winds as a large row of tall poplar trees planted along the main road protects it from both traffic noises and wind.

Along the shoreline, since the 1800s, SLU preserved a nature reserve (in yellow on Figure 17) named the Southern Bay of Lomma. with meadows, pasture, fields, and grasslands, used for grazing and contributing to attract migratory birds throughout the year. Lomma municipality has since created a recreational nature reserve, the Öresundsparken (in orange on Figure 17), following the shoreline northwards. Holding habitat for birds, batsn and insect species across sand dunes and deciduous tree lines, these nature conservation sites extend a few hundred meters into the Lomma bay, for a protected area of marine life (Bahr et al. 2017).

From the sea, it takes around 2km eastwards to reach the SLU campus along a country road, Sundsvägen, bordered by old Chestnut trees and bushes, giving it a traditional Swedish avenue character.
Established in 1991 by teachers and researchers of the university's landscape architecture department, the Landscape Laboratory is located further down Sundsvägen (in light green on Figure 17). Standing on what used to be monocultural fields, this grown forest acts as an entrance to campus. It's located along the sides of the train tracks connecting Malmö/Burlöv station to Lomma station, as well as along the south-eastern edge of Alnarp's parken, the campus park. This 13-hectare forest serves as practical experimentation and demonstration for interdisciplinary research; testing out different growing, coppicing, and maintaining methods as a varying landscape between forest stands, edges, and groves (Gustavsson 2023). This space creates ever-changing vegetation "rooms" and senses of space, with their unique character, which are explored during field visits of many universities from inside and outside SLU - generating over a hundred scientific publications worldwide (ibid.). Locally, the Landscape Laboratory is becoming an important ecosystem for flora and fauna while attracting locals for recreational purposes, bird watching, etc.

Further down the road to campus, Alnarp's recreational park (Tor Nitzelius or Alnarpsparken) is located on the university campus and covers a surface of around 30 hectares (in dark green on Figure 17). There is a long historical past for part of the park, for being Sweden's oldest and only elm tree forest, and later becoming the site for the Agricultural institute in the 1870s. Designed following English romantic garden principles and coupled with a species-rich botanical and horticultural garden, the winding paths across century-old trees attract many visitors daily and set a healthy environment to study at the Agricultural University (Alnarp Landscape Laboratory, slu.se.).

The project site is therefore integrated into a biophysically diverse local landscape, in a coastal region and its agricultural character, surrounded by urban fabrics. From the pysical landscape only, many aspects of potential multifunctionality arise, offering recreational and educational opportunities in a rural and natural peri-urban environment relating to the following land uses: low rise houses, market garden, major education institute, schools, crop land, fallow land, plantation, dense forest, open forest, grazing land, railway lines, roads, ponds and nature reserves.

1.4 Alnarp's farm today

Through Particant observation (PO) and Observational field studies (OFS), a depiction of Alnarp's farm, as it exists today, grasps the result of four long years of work, expansion and space optimisation.

At the Southern entrance, a set of old farm houses and barns is used as a Loppis (second hand) and student housing. One part of a farmhouse with an attic is rented by Alnarp's farm as a storage room. Across from this set of buildings, an aged man owns chickens and sits in front of his chicken coop almost every day. The half-open tractor shed behind the loppis is also used by Alnarp's farm as more storage accumulates over time. Along the fence, a gravel path separates a vacant field from the farm. This vacant field is lightly managed by Lönnstrop research station, but remains empty. Imported compost and woodchip piles are stacked up along the gravel road.

The social area at the main South-western entrance is an important space for the community. There stands the kitchen, toilet, tool shed, and washing station, market stand, teaching tent, and fire pit areas. It becomes the main area for setting up stages and workshops when the farm hosts events and festivals across the season. The social area is surrounded by the market garden on the northern part. A small young birch tree stand borders the southern edge of the farm, acting as a wind hedge and visual barrier as well as a nesting place for birds, and a shaded area for people to rest.

The market garden is made up of many ecological areas. Two big research polytunnels owned by SLU stand for research purposes and crop production. Behind those polytunnels, on the western side, a row of coppiced willow trees acting as wind shelter, and serving for wood production separates the market garden area. The market garden is composed of rows of elevated soil beds where flowers, herbs, vegetables, and berry bushes are planted in a crop rotational system - meaning most beds are planted with several vegetables during a season. This is the case for the beds located in the 3 polytunnels located in the market garden area. Along the main alley, smaller areas are

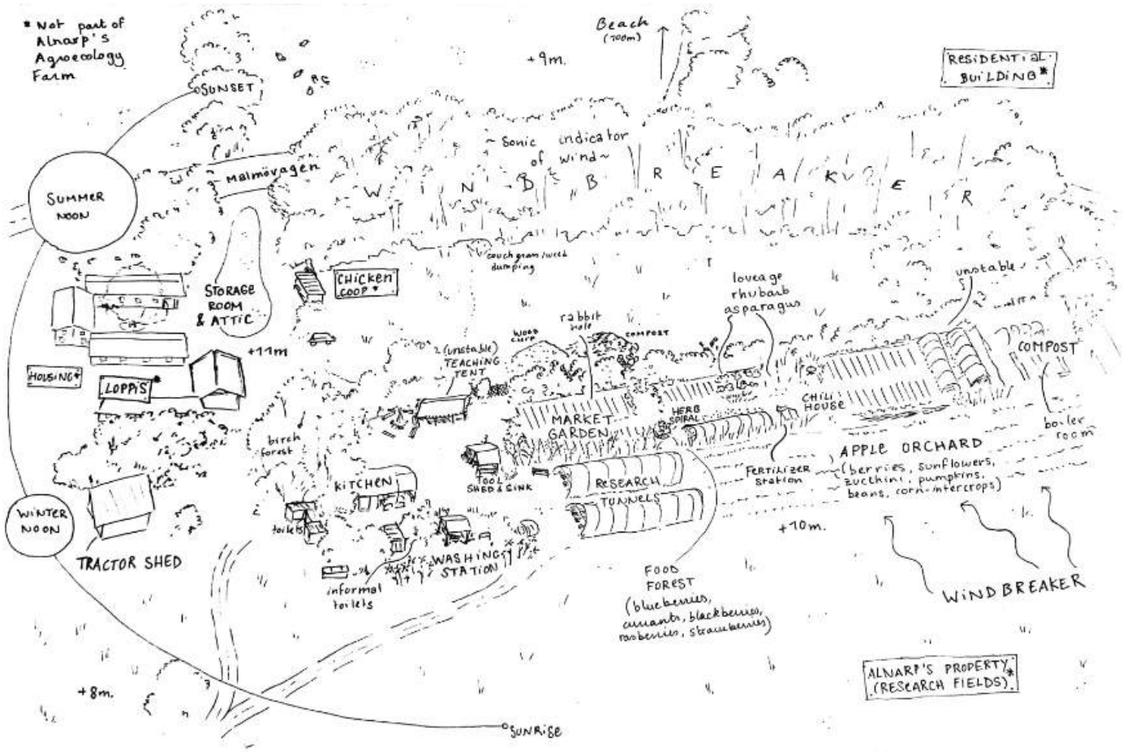


Figure 18. Alnarp's agroecology farm, neighbouring the studied field, with its main farming ecosystems.

Figure 19. Section of the apple orchard area, planted with pumpkin varieties, zucchini, corn and sunflowers in between rows of apple trees and berry bushes. The pressure of weeds in summer is minimized by the dense plantations, though still persistant. Not to scale.

created where different foods are grown. A herb spiral in front of the first polytunnel makes for a gathering location during farm tours and workshops. Further down along the polytunnel, a perennial area with an edible flower meadow facing a small chili greenhouse invites a slower-paced, contemplative break. Behind this chili house is another willow tree plantation intercropped with berry bushes, called the food forest. As we move down the alley after passing the two polytunnels, a composting area turns all the green stuff and food scraps into soil again, aiming to reduce the amount of imported compost and enhancing the nutrient cycle of organic matter, a very important component for the farm .

On the northern side of the research polytunnels, along the market garden on its Eastern side is an apple orchard system of 5 rows of Apple trees (recuperated from a research project on SLU) intercropped with berry bushes. In the first third of this area, vegetables, beans, corn, and flowers are intercropped, see the section in Figure 19, between the rows of apple trees and berries. The following two-thirds of the orchard are intercropped with Kernza wheat, used for its beneficial compost 'brown' materials.

These ecosystems grow together, produce food, knowledge, nutrients for the soil, and compost materials. While still being dependent on inputs bought outside the farm, they aim, over time, to create an agroecological and multidisciplinary landscape. The farm becomes an educational as well as recreational place for people to practice their interests, in a space that allows for a blank canvas of creative opportunities. This freedom attracts engaged individuals to have more insight and overview on the different aspects related to the farm, engaging to different degrees.

SiTE ViSiONiNG

2.1 Future developments

The site is surrounded by ongoing and future changes in the local landscape.

From the municipality's side, Lomma is planning to enhance, between 2020 and 2030, the protected areas in its municipality, including the prioritisation of ecological corridors (Björn, 2025, SSI). The site is located between 2 planned ecological corridors (see Figure 20), but neither is planned to reach over Sundsvägen.

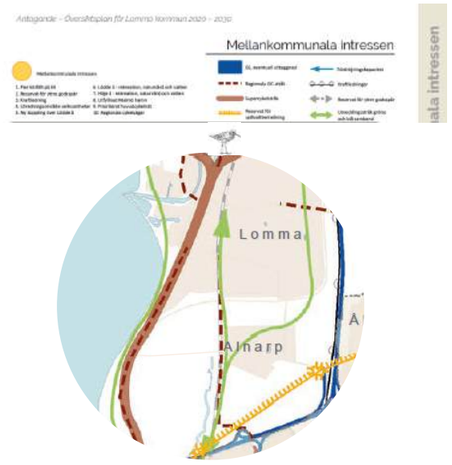


Figure 20. Green ecological corridor plan (green arrows) for Lomma municipality's future development plan around Alnarp. Source : Översiktplan p87 (Liljenberg et al., 2020)

"Ecological corridors need to be linked together for recreation, and biological diversity and increasing water retention capacity in the landscape. "
Liljenberg et al., 2020

During an interview with Helena Björn, environmental strategist at Lomma municipality, she expressed her concern for biodiversity loss, mentioning the importance of meadows in acting as an important shelter for pollinating species. Those shelter spaces are as valuable in urban areas as in the agricultural landscape of Alnarp, as they increase water retention capacity while enhancing land multifunctionality. There is an overall wish from Lomma to connect the green recreational areas around Alnarp (Nature reserve, Öresund park, Alnarp's park, Landscape Laboratory) to the city center located 2km northwards of campus (Björn, 2025, SSI).

The future of the field trials led by the Lönnstorp Research Station is questioned. Some tensions arose recently when one of the 3 organic research fields used by Lönnstorp Research Station (mentioned earlier in Figure 13), towards the North of Alnarp campus, was sold to Lomma municipality, leading to a rising scarcity of organic land for research. From the interview with the research station manager, fields had to be managed organically for several years before being certified and labelled as organic (2025, SSI). This would entail starting a long process of change in agricultural practices to turn the surrounding conventional fields into organic ones and start research from scratch.

Regarding SLU, the Projected Campus planning 2025-2045, revealed in late November 2025, is aligning with this wish. After several attempts to agree on a campus development plan, this planning will include additional infrastructure zones related to the building of the new train station at the intersection between the railway and Sundsvägen, expected to become a major accessibility shift to Alnarp. The construction of the new train station will no longer allow vehicles to enter campus through Sundsvägen, preserving the character of the country road by more inviting pedestrian and bicycle traffic. Though setting a physical mobility boundary between the site and campus, Sundsvägen is bound to enhance connectivity between the Lomma coast and Alnarp campus (Knutsson Wedel & Löwling, 2025). Designed by White Arkitekter, an important Scandinavian architect and landscape architect firm, the proposed campus prioritizes the ecological benefits of numerous ecological corridors and enhancing edge zones along the main access ways to campus, which coincides with Lomma's natural environment program, along with the construction of research facilities. With these goals in mind, the future campus is aimed to become "*a green knowledge hub in a dynamic and learning landscape,*" with the following 4 goals in mind:

A sustainable and dynamic campus.
A university environment in harmony with the landscape, park, and built heritage.
A meeting place for knowledge and innovation.
An attractive, vibrant, and safe campus.
(Kyrö Wissler, n.d.)

These local future development projects show that there is an existing presence of multifunctional landscapes around the studied field. Between production, recreation, research, and nature conservation, the current use of parts of the landscape opens new pathways, anchoring the site in a landscape expected to diversify itself further.

2.2 Integrating local needs

SLU is promoting research across its land, and a lack of effort and support is felt when asking the local users in the fields. Table 2 summarizes the main interests, expectations, and motivations for change in the landscape from the interviewed stakeholders.

Academics as well as farmers are not satisfied with the fact that land management decisions are being taken by SLU in Uppsala, physically disconnecting the decision making from its locality. Mariana Forero, chairperson and farmer at Alnarp's farm, expressed this feeling of absence:

«*They're based in Upsala, and they haven't given us a contract in more than three years.*»

(Forero, 2025, SSI).

Research is the main factor for why the land should be used in certain ways on Alnarp's property. As rent is involved, many research trials have died out due to the lack of budget given to faculties and student initiatives. Most of the management of Alnarp's properties, 450 hectares, is done through three farmers, who are in charge of managing by themselves the production and research trials simultaneously. For the Lönnstrop research station manager, this is a reason for the lack of investment put into actually innovating in more research:

Stakeholder	Group	Role	Department	Interests	Expectations	Motivations for change
Victoria Thuiller	Agency personnel	Agricultural manager	SLU Department of Estates and Management	Own and manage land for SLU as part of research infrastructure	Prioritize long term experiments with data collection over decades	Enhance environmental efficiencies or actions for biodiversity on large scale conventional farmland
Scott Wahl	Academics	Teacher	SLU Landscape Architecture, Planning and Management	Regenerative and multifunctionnal landscapes around the university	Transition slowly but radically to another way of managing the land around campus, full support of SLU, programs merging and keeping the project rolling	Shows the example for more regenerative farming, even on large farming areas, as a unversity
Need	Student	Master Student	SLU Food & Landscape	Promote sustainable food & education	Link theory to practical work, integrate more agriculture in spatial planning	Impact future food policies regarding waste managment & ecosystem services relating to agriculture
Mariana Forero	Farmer	Chair person	Alnarp's Agroecology Farm	Community engagment for local groups (students, residents, SLU)	Break down silos within SLU and promote interdisciplinary collaboration at the farm. Convincing reluctant parties	Integrating agroecology with other disciplines, long term vision of the farm
Researcher and Sation manager	Academics	Researcher and Lönnstorp Station Manager	Biosystems and Technology	Leading research trials on SLU land which are part of SITES	Longer terms research, taking into account how many years/decades areas need to label agricultural land as 'organic' etc.	Integrating sustainable practices from both organic and conventional farming, highlighting the educational potential of the research landscape.
Helena Björn	Policy maker, regional planner	Environmental strategist	Lomma Municipality strategy	Setting up protected areas in a comprehensive plan of the municipality	connect the different protected areas with green corridors, or I call them ecological corridors. Include more water management into agricultural irrigation, turn to nature based solutions	Biodiversity and recreation, landscape connectivity
Hakan Schroeder	Academics	Executive Director at SLU Partnership Alnarp	The Unite for collaboration and development	Change current land managment around campus to become more multifucntionnal and inviting to research, education and innovation in collaboration	more contact and involvment of Alnarp's egendom by a developed assignment and organisation	Research, education and societal impact by knowledge and innovation. An attractive SLU Campus supporting sustainability.
Dennis Andreasson	Academics	Doctoral Student	Faculty of Landscape Architecture, Horticulture and Crop Production Sciences	"Living Lab" approach for Alnarp's campus development and planning processes.	Long term vision for small projects around campus to be documented and supported by SLU	"Gather people and ideas for an integrated and experimental campus landscape"
Anh	Student	Master Student	SLU Plant biology for sustainable production	Plant breeding and computational simulation	More support from SLU increasing flexibility in the options between lab work, lectures, or field-based experimentation	Learn by experimenting and interacting with the growing environment
Andrew Gallagher	Academics	Doctoral Student	SLU Future Foods	Integrating food system challenges into municipal planning practices for societal and ecological benefits	More transition in the food systems to be framed in policy objectives of SLU	Improving municipality engagment and impact in their local food system
Student	Student	Master Student	SLU Forest Ecology and Sustainable Management	boreal forest management in view of Climate change mitigation	Conducting experiments on larger scale forested land to study impact on ecology	Carry out long-term sustainable timber harvesting , emphasizs on forest ecosystems' importance

Table 2. Stakeholders interviewed along with the main takeaways for our discussions. (available in bigger size on Annex 2 p.80)

« If SLU intends for this to function as a research area, there must be a designated person responsible for research-related matters. As noted earlier, I would prefer it to be treated as a research infrastructure, but that requires dedicated responsibility for its management and maintenance as a research resource. »

(Lönnstorp Research Station manager, 2025, SSI)

This lack of capacity has been felt with Alnarp's property farmers as it resulted in the absence of response from their side when trying to get in touch with them across the season.

Inside SLU, from interviews with stakeholders involved in the planning and decision-making process, the development plan for the future campus brought up the same concerns. Although supporting change in the current land management around campus to become more multifunctional and inviting to research, education, and innovation, a shared statement amongst stakeholders was the disconnection of local needs from the planning of the future campus. There is a need to develop ideas on site, gather people, through bottom-up initiatives, in order to bring deeper reflections on future living laboratory opportunities.

For Dennis Andreasson, a doctoral student in the faculty of Landscape Architecture , the decision makers should experience the actual scale of such a project to « spend time here, talk to people here, try to understand the human perspective » (Andreasson, 2025, SSI).

This physical and organizational distance is felt by Håkan Schroeder, the executive director at SLU Partnership Alnarp, in the unit for collaboration and development:

« That is a problem. So to say that they (decisions) are steered by different organizations and some with the leadership located in Uppsala. The physical distance makes it harder to be informed, take initiatives and be active in local activities and opportunities. The communication and coordination between the different organizational parts is another challenge in exploring the multifunctional potential in land use and management. That's slowing down the progress . »

(Schroeder, 2025, SSI)

Dennis Andreasson has been part of the reference group to comment on the campus development plan. He has been supportive of the plan while remaining skeptical on SLU's wish to develop laboratories in the fields:

« From my approach, I think that if you want to do that seriously, you would have to include a living lab approach already in the planning process. So you need to build that into the organization (otherwise it won't really be a living lab, it would just be like another experimental field) to sort of secure the fact that as many actors as possible are interested in this product before it gets started. Because that also allows the possibility to then maybe be used in different ways or find different kinds of financing in the long run. »

(Andreasson, 2025, SSI)

This would avoid small project fundings to come to an end and facilitate long-term experiments with data collection over decades, as well as enhance monitoring and developing environmental efficiencies or actions for biodiversity on large-scale conventional farmland (Thuillier, 2025, SSI).

For Scott Wahl, teaching in the faculty of Landscape Architecture, a slow yet radical transition to another way of managing the land around campus would feel necessary. As he doesn't imagine systemic practice changing soon in individual farmers if SLU doesn't start:

"Maybe we could be a better example because we are an agricultural university. We're a university, a role model for a lot of others. And if we don't do it, why should anybody else? To lead the way.
So we thought we can maybe get some people together from the agroecology program, architects, teachers, and maybe we can come up with some ideas and present them."

(Wahl, 2025, SSI)

There is a wish to show the example as a university which is said to be leading in sustainability issues* and who wishes to become climate neutral by 2027. Scott Wahl supports his statement if it is combined with an overall switch in mentality, merging faculties into more interdisciplinarity towards a truly regenerative campus (2025, SSI). Håkan Schroeder calls for more collaboration and interdisciplinarity within programs, as well as at the European level, supporting money flow into living labs to share and support international examples of sustainability and experimentation by students (2025, SSI).

Many actors come into play as the possibilities of research on this land enter a process of decision making from top-down stakeholders like Victoria Thuillier mentioned earlier, though decision-making processes are made in offices sitting far away from the campus Alnarp. SLU covers numerous divergent opinions, agreeing in some areas that all stakeholders want sustainability to be the center for research and education, but sustainability is viewed on different scopes and scales of farming in the research realm.

The future campus development plan published in November was awaited by many parties, which had not seemed to be convincing to those in favor of including Living Lab and multidisciplinarity as the core guiding principles of the planning process.

2.3 More space for Students

Students have been the most responsive in the study. They represented 4 out of 11 stakeholders interviewed (see Table 2), over half of the workshop participants, and dozens of them continuously showed up throughout the open farming sessions along the seasons. This resulted in most input from the programs of the design proposal being generated by students (see Table 3). Noting that 6 out of 10 board members of the farm (including myself) are also students from either SLU or Lund University.

Stakeholder	Method used	Interests	take away	Program generated	Land use category (according to table 1)
Mariana F. (AAF)	Semi structured interview	make office tasks on site possible	heated space	Office & open space	2. Rural Built-up, Community Halls
Student (SLU)	Semi structured interview	long term sustainable timber harvesting	different scales and diverse forestry	Forest lab	4. Forest, open Forest
Helena B. (Lomma)	Semi structured interview	connecting & creating protected green areas	protection areas for biodiversity	Meadow	4. Vegetation, Grazing Land
Dennis A. (SLU)	Semi structured interview	Living lab experimentation campus	gather people and ideas	Garden pavillion	2. Rural built-up, Cultural Complex
Anh (SLU)	Semi structured interview	diversify research opportunities	outside of lab experimentation	Experimental garden	3. Rural Agricultural, Plantation
Mariana F. (AAF)	Semi structured interview	practicality and access to tools	shared storage	Tool shed	2. Rural built-up, Huts and hamlets
Helena B. (Lomma)	Semi structured interview	enhancing the recreational aspect of nature areas	exploring a multifunctional foodscape	Play area	1. Recreational Built-up Land, Playground
Mariana F. (AAF)	Semi structured interview	put forward the interdisciplinarity of students	community space outside of class	Hangout area	1. Recreational Built-up Land, Playground
Farmers (AAF)	Participant observation	propagation and nursery	indoor heated space for nursing	Glass house Lab	3. Rural Agricultural, Plantation
Farmers (AAF)	Participant observation	protect crops from intense wind	wind proof hedge on edges of the field	Hedge	3. Rural Agricultural, Plantation
Farmers (AAF)	Participant observation	aquatic ecosystem and water runoff area	water retention during heavy precipitation	Pond	6. Water bodies, Pond
Participant	Participative design workshop	integrating future campus design	more visibility from campus	New entrance	5. Transportation, road
Participant	Participative design workshop	alternative way along the road	pedestrian alley and berry bushes	Berry bush alley	3. Rural Agricultural, Plantation
Participant	Participative design workshop	more animals	summer grazers and cows	Pasture with cows	4. Vegetation, Grazing Land
Participant	Participative design workshop	more animals	apples and mobile hens	Chicken coop in orchard	3. Rural Agricultural, Plantation
Participant	Participative design workshop	attract new customers	selling point	market stand & self pick	1. Commercial Built-up Land, Market yard
Farmers (AAF)	Participant observation	winter crops and indoor areas	alternative to plastic polytunnel	Geodomes	3. Rural Agricultural, Plantation
Farmers (AAF)	Participant observation	reuse water used for washing vegetables	filtration closed loop system	Cistern	6. Water bodies, Reservoir tank
Farmers (AAF)	Participant observation	prolongate the gap between harvesting and eating	indoor cooled space for storing	Cold storage room	2. Rural built-up, Huts and hamlets
Farmers (AAF)	Participant observation	diversify production	open new areas for aesthetic qualities	Herb & flower garden	3. Rural Agricultural, Plantation
Farmers (AAF)	Participant observation	host more students and interns	indoor heated space for housing	Accomodation	2. Rural built-up, Huts and hamlets
Farmers (AAF)	Participant observation	transform raw ingredients on site	selling point	Farm café	2. Rural built-up, Huts and hamlets

Table 3. Participants and their interests leading to the choice of programs for the cards from their emergence before the workshop (blue), and during the workshop (green) and design proposal during the workshop (purple) and after (orange). (available in bigger size on Annex 3 p.81)

*The university's motto is literally "Science and Education for sustainable life".

During the semi-structured interviews with SLU students, two students expressed their need to have more access to land to be able to experiment with what they are taught in class for themselves in order to grasp the reality. This was particularly relevant as they have been studying "Plant biology for sustainable production" and "Forest ecology and sustainable management", which looked closely into the feasibility of the project.
The student in Forest ecology, specialized in boreal forest management in view of Climate change mitigation, expressed the importance of carrying out long-term sustainable timber harvesting (Student, SSI, 2025). A statement that the principle is shared by farmers of Alnarp's farm, emphasizing creating an ecosystem that can regenerate by itself, which evidently takes more management and time until large amounts of timber are harvested. However, as the Agroforestry manager of Alnarp's farm, a student in Forestry and Landscape, pointed out during a spontaneous conversation, "to start forestry you need to start with planting one tree at a time" (2025, PO). While one is highlighting the individual care which needs to go to each tree in order to make the practice sustainable, the other stated that real benefits will only be observed through large-scale forestry research. Trees, as a general topic, evoked different reactions from students due to scale and management preferences between them.
Anh, a master student in Plant biology in the Plant breeding and computational simulation specialization, and a volunteer at the farm, sees it as a way to learn by experimenting and interacting with the growing environment. She shared her wish for more flexibility from her program to allow students to choose between lab work, lectures, or field-based experimentation, as she mentioned that most of her classmates had not yet had hands-on field experience during their studies (Anh, 2025, SSI).

The two other interviewed students approached the discussion with a more political scope. Need, Master student in Food and Landscape, is focusing on themes related to education and promotion around food sustainability to give more visibility on the potential of Research to impact our future foodscapes. Having a plot of land to experiment with multifunctionality, such as landscape design and food production, would allow her to do more research on pressing topics such as waste management and ecosystem services to impact future food policies.
Her statement corresponds to what Andrew Gallagher, a doctoral student in the SLU Future Food department, is currently studying. By integrating food system challenges into municipal planning for societal and ecological benefits, his research aims to improve municipality engagement and impact in their local food system. Though SLU and the municipality stand on different grounds, this reinforces the emphasis to :

« Encourage innovation research and help facilitate collaboration in contact between business researchers and municipality representatives. »

(Gallagher, 2025, SSI)

Bringing closer topics of food security and preparedness, by giving them the feeling that they can, individually and collectively, make a change in the face of future instabilities.

The answers given would mean that more space for practicing farming with the intention to feed, educate, and research would be beneficial for students' interest, Anh, and students in plant biology would be able to experiment with their preferred plantations, while allowing for Need to lead her studies on the same site for different purposes. Students of SLU leaned towards a will to experiment on land, especially given the hundreds of hectares of Alnarp's property fields available to research projects, in the condition that research has a determined time frame, whereas those multidisciplinary research projects would engage a different management and time frame to obtain tangible results.

2.4 Alnarp's farm tomorrow

With students coming from social to environmental sciences to specialized horticultural, agronomy, and food science, the knowledge resources for keeping this student initiative running abounds with potential. It becomes a place serving more than the purpose of growing food, merging with this social aspect of "open garden sessions" where anyone is invited to freely join and give a hand at growing food. While meeting with other interested volunteers from different backgrounds, programs intertwine as they exchange knowledge relating to the relationship each has with the agrarian foodscapes. When help is not needed in the garden (although rare), many other non-farming tasks are available. Help building new infrastructure, foraging for materials, fixing, and repair work, and general care work are always on the list. Support for non-physical work, including planning of workshops, social media, and public relations communication, takes a big part of Alnarp's farm workload and is appreciated.

For Alnarp's farm to become an autonomous system that doesn't rely on SLU to function as an entity, some important programs are missing to this day. The most necessary missing program is a nursery on-site. Currently, AAF is renting tables in research greenhouses on campus, 2km away from where the seedlings are planted, making the farm heavily dependent on the university's cooperation which, can be tricky over time. A dry and heated indoor space to store, and the seedlings' growth seems essential to the smooth and autonomous running of the farm.

As the farm is an independent organisation, many administrative, communication, and management tasks are done on a weekly basis individually at home by the main board team, which is often in either Lund or Malmö. Towards the end of the season, as winter approaches, Season Review meetings take place at different locations across SLU's classrooms, libraries, and other less formal venues. The instability, as well as the physical separation from the farm, can at times lead to the office work being rushed, and the farmers feeling less connected to the farm and its practices. The presence of an indoor office room at the farm would allow for the team to have a functional and perennial solution for working online, and a personal, continuous room to host the many meetings in a common, neutral space not bound to someone's home or SLU's room availability.
When interviewing Mariana Forero, the chairperson of the organisation, the status became clear that today the farm relies ultimately on the board and volunteers who are mainly students from SLU, Lund, and Malmö universities to run the farm every season, and interns coming for Erasmus exchange programs (Forero, 2025, SSI). Finding interns' accommodation is tricky, considering the absence of nearby available housing and the overall lack of accessibility to commute to the farm every day. Accommodation is available for students on campus in Alnarp and not for interns of the farm, which is considered an external entity of the university campus. It has been observed, however, that several interns repeatedly integrated a program at SLU following their internship experience at the farm (2025, PO). The busiest season for farming is also occurring throughout the summer, during the period when the university is closed for summer vacation, which can last from early June to the end of August in Sweden.
As the farm becomes a more complex system over the years, with a high density of plantations and its many variations, investments are made towards tools and materials for the productivity and efficiency of the garden, the good functioning of the kitchen, workshops, and event infrastructures, etc. In order to safely store everything in hygienic and secure ways, complementary storage spaces would be required around the farm. The multifunctionality of space could be considered, knowing that most of the material and tools need to be stored for winter, whereas from May to September, they

are used and maintained constantly in the garden.
As for the current land used for the farm, every corner is being used for a specific purpose. When observing agroecological practices, there always seems to be a creative way to produce more with the same amount of land surface, to enhance the system and enrich its biological and environmental diversity, or to enter an artistic dialogue between growing processes of both plant and human.

Ongoing discussions within the board as well as between the farm, Alnarp's property, and SLU campus related to integrating livestock occurred over the season (Forero, 2025, SSI). Chickens and Ducks' integration into the farming system would improve soil health, bringing nutritious fertilizer as they would act as a pest management factor to reduce slug and bug pressures around the farm. Integrated in mobile hen houses in between the apple orchard or in the market garden, chickens and ducks would be a source of production from their eggs, while lowering the costs of importing compost and fertilizer from outside the farm. Debates are still ongoing, considering the shift of responsibility to manage livestock, and measuring the potential risks of investing in an entirely new structure for them.

Cautious about the use of water consumed from the municipality, Alnarp's farm is using drip irrigation to water most of its production, except for the compost and perennial garden area. After evaluating potential options to reduce water runoff and waste, the idea of building a pond or cistern, open and naturally consolidated with filtering aquatic plants, emerged (2025, PO). Creating a wet environment for new species to nest and reproduce would yet again benefit both the farming system, its inhabitants, and the wider environment, mitigating heavier rain events and acting as reserves during dry periods.
More ideas have been discussed with Alnarp's farm and analyzed in the Table 3 to obtain the information along with a brief description of the key takeaways leading to their integration in the participative design.

DESiGN

3.1 Guiding principles from Workshop

After processing the main ideas from stakeholders and integrating them into the making of the design proposal, the workshop was hosted around a table in the market garden on a cloudy day. We were standing in front of polytunnel 1 and could see the field behind us through the greening and thickening willow hedge.
The card game was used during the workshop as a guiding tool to help participants make an informed decision on the placement they chose. None of the information written down is set, but rather adaptable to which vision one sees in the space when looking at the map from above, and at the field from the farm. The programs were bound to evolve later, depending on their placement and how people wished to make use of them. Some programs have been doubled as I realized the increased interest from multiple stakeholders to have different management strategies for the experimental gardens and the forest labs, allowing for a more ecologically diversified system, as well as multiple opportunities for small-scale research to be done.

The group of 17 participants was given time to think about what each would like to eat, grow and/or produce more locally, allowing for a diversity of plants, activities, and ecosystems to evolve from their answers see Figure 21). There was a strong wish from the participants to grow fruits from warmer climates locally (10 times), suggesting a desire to create a more tropical greenhouse ecosystem to grow fruits such as mango, passion fruit, and avocado, or more dry environments for peaches and citrus. Berries were expressed 4 times for their cultural importance in the Swedish climate to act as a symbol for each season. Staple foods were also an important answer, 4 participants expressed their wish to be more resilient in producing local staple foods such as potatoes, hemp (for textile making too), soybeans, and native root vegetables, which can be easier to grow in the Swedish climate.

Figure 21. Participatory Design Workshop: participants voice their thoughts on the question «What would you like to produce/grow/eat locally?». 7th of June. Photo credits: Eka Cang

Figure 22. Participatory Design Workshop: participants place their cards on the map and sharing their reasoning with the group. 7th of June. Photo credits: Eka Cang.

4 answers which were exhibited already exist in the current farming system of Alnarp's farm, such as baby kale, edible flowers, herbs, and (an attempt at) mushroom inoculation. Lastly, livestock have been expressed 3 times through hens, cows, and more animals in general on the farm, which implies further agricultural diversity on the field, reducing the scale of farming while enhancing the biodiversity of the area. The final answer, sea food kelp, suggested an even border diversification of production by farming the nearby sea.

As the placement of cards followed the first exercise, participants were asked to place the cards in order of program "area" first, then "infrastructure", and lastly "activity" (see Figures 22 & 23). The areas outside the field, around the farm houses and tractor shed, as well as over the pasture leading to the sea, were made use of, opening a greater perspective on possible inter-field programs. The placement of cards strong in social activities were placed close to alnarps egendom's barns, suggesting an inviting connection between Alnarp's farm and the "growing lab" and Alnarp's property. The pond was placed at a higher point in the field inside a forest laboratory, which contradicted the initial reason of having a water retention at the lowest point possible, however from it emerged a possible water channel redirecting the rainwaters to the lower areas. The use of existing farm houses and buildings as a garden pavilion would attract more visibility from outside, be easily accessible to the public road, and mix old buildings with new dynamic uses. After asking each participant to place their notes from the first exercise onto the newly arranged growing lab, the glasshouse was quickly filled with fruit trees, and a suggestion to add another one was made. The berries were all placed along the hedge, enhancing the benefits of having a pedestrian path along Sundsvägen as an ecological corridor between the protected areas and valuable green areas of Lomma municipality. Finally, the empty spaces located behind Alnarp's property, as well as the strip of land between Malmövagen and Alnarp's farm, became suitable for grazing animals, as they have different needs regarding environments and surface areas.

An element was added during the workshop, a new entrance on the East side of the site would allow for easier access from the campus. Integrating the Farmer's market at both entrances was discussed as a way to invite people passing by car to slow down and stop by. Some elements have been added later in the drawing and processing phase, as the results of the workshop were only part of a longer process; participant observation was still part of my routine. Elements such as geodomes, farm café or the integration of chickens in an orchard agroforestry system have been discussed over the summer, as the team discussed what they wanted if possibilities weren't limited to the farmland surface nor to financial costs. Some programs emerged across different methods, the integration of animals and grazing areas, for example, was a vision shared amongst multiple stakeholders.

The design proposal was developed keeping in mind the following principles interpreted from the stakeholders' wishes (from Table 3 & Figure 23):

- Engaging and connecting with Lomma
- Ecological corridors between green areas
- Innovation for regeneration
- Multifunctional landscapes
- Experimenting with the plot around campus
- Long-term learning grounds for SLU
- Long-term upscaling of experiments
- Integrating more foodscapes in spatial planning

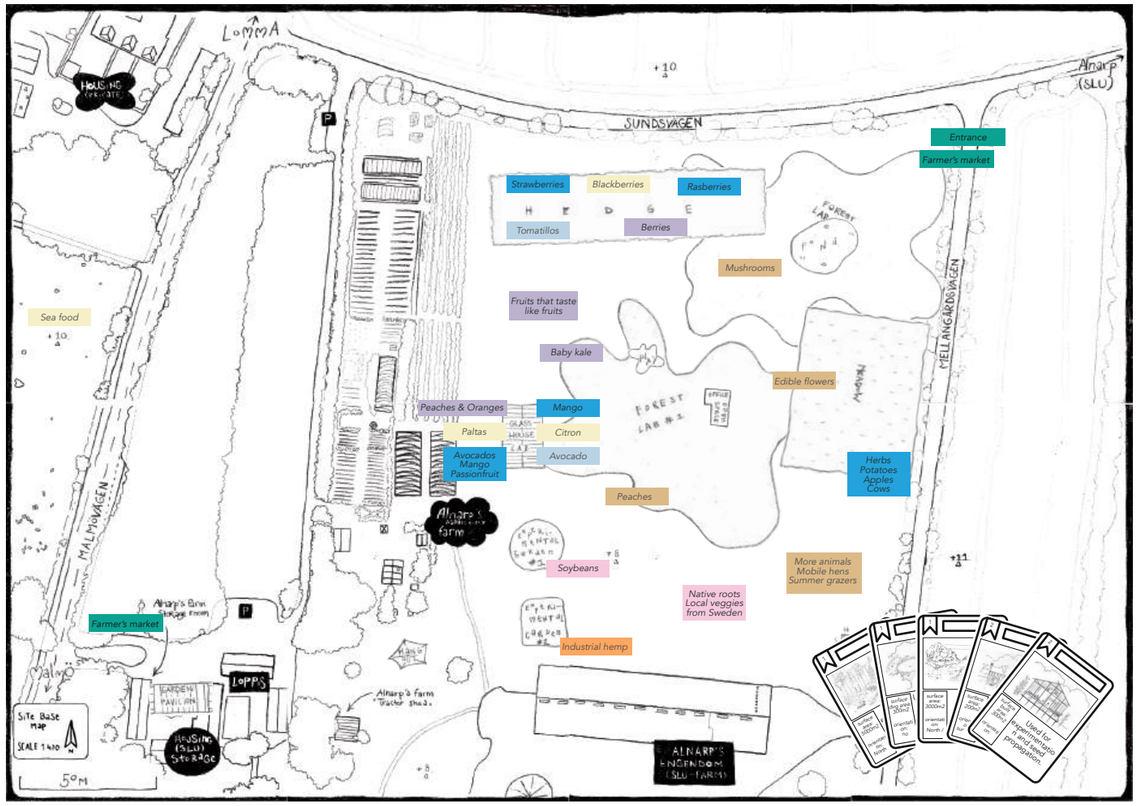


Figure 23. Results of the Participatory Design Workshop: after having placed their card programs, participants connected their answers from the first question to the possible locations. (available in bigger size on Annex 4 p.82)

Next page: Figure 24. Design proposal for the studied field after gathering participants' visions and observations over the season.

3.2 Design Proposal

As the ideas and observations gathered during the year led to a design narrative process, the final step, which took place throughout the summer became the following proposed design for a future space where students are granted a field, where research meets transdisciplinarity, and where boundaries of land ownership and land use are loosened. Through 4 short stories relating to Accessibility and landscape connectivity, Educational opportunities, Nutrient Cycling in the farming system, and Biological diversity towards research opportunities, the following section is a narrative of what life around this area would feel like, once grown and established in the landscape.

Accessibility & Landscape connectivity

As we drive from Malmö through Malmövägen, a road sign to the right, “The Growing Lab”, slows the vehicle down to peek into the alleyway and its parking. Just a few meters down the road, a young family is walking towards the newly built bus stop, where a group of people are already waiting. While we keep driving on our way to Lomma to the North, a summer breeze rushes through the tall poplar trees along the road, moderating the wind coming from the Örsesund sea. To the right, behind a herd of cows peacefully grazing their pastures, we perceive silhouettes of fishermen and people harvesting seaweeds in the glistening waters. We slow down as a pedestrian crossing approaches, young people walking up the gravel road coming from the beach cross over to a small path leading to Alnarp’s farm and the growing lab. Intrigued, we take a right turn on Sundsvägen, now no longer accessible to vehicles, and a direct right again onto the gravel road where we find a parking space. As we get out of the vehicle, several paths open up, but we decide to head towards the East. Through the “Berry Alley”, hundreds of colorful berry bushes frame a footpath parallel to the road, though barely visible through layers of bushes and trees, where birds seem to have found a haven of peace and abundance of food. A group of people who walked from the opposite side, arms full of vegetables, let us know about the farm stand located at the end of the “Berry Alley”. After asking them where they come from, we are surprised to realize that the train station of SLU University is finally operational. The numerous ecological corridors were growing over what used to be roads and were attracting many pedestrians. The shaded green alleys, bordered by wild flowers and hedges, opened up perspectives on the surrounding fields and linked the Lomma to coastal nature reserves, Alnarp’s farm, Alnarp’s property, and the Growing Laboratory, further down the road towards Alnarp campus with its different landscape laboratories and parks.

Figure 25. Hedge as depicted on the card

Educational opportunities

We were walking along the Sundsvägen from the train station to have a look at this place mentioned during a lecture, where students can engage in live experiments and conduct research while becoming part of a dynamic community. Our professor mentioned a seminar taking place today at the “Garden Pavilion”. As we walked past the “Berry Alley” to our left, we walked along the gravel road heading South to the location. The number of bikes parked under the shed was letting us know dozens of people were there already, but as we approached the lively old barn, the clucking of chickens coming from behind caught our attention. A coop, with an aged man sitting in front of it, a bucket of food scraps at his feet, and next to it, another farm stand (where we could’ve swished our vegetables instead of the one earlier). In the middle of the gravel alley connected to the main road, a colorful flower patch buzzing with insects and pollinators was acting as a roundabout. We could read “Self-Pick Flowers” on the wooden sign and got excited. Deciding to do it later, we approached the old barn and entered a shaded outdoor patio, the barn framed on both sides by two renovated farm houses, one seemed to be residential while the other was housing a loppis, café, and store with a variety of fresh foods. Bats’ and birds’ nests could be seen all around the barn; the amount of life here was vibrant. Classmates who seemed to come here regularly were making today’s special pizzas and salads from the garden’s edible flowers and herbs. As they noticed us, they asked us to grab from the storage room some material for the kitchen. We were shown its location and walked over to the gravel alley towards a new set of farmhouses centered around an impressively wide chestnut tree. There, tables and benches built from old wood palettes were used by families and students to eat on and enjoy the shade. The storage room was a well-organized space, with tools for gardening, support for crafting, and materials for food, everything neatly stored. We grabbed what was needed and rushed back as the seminar was about to start. The old barn we entered was a transformed space from the inside. A small stage stood in front of a tiered space on three small levels, all made of wooden palettes, all bathing in sunlight shining through the roof windows.

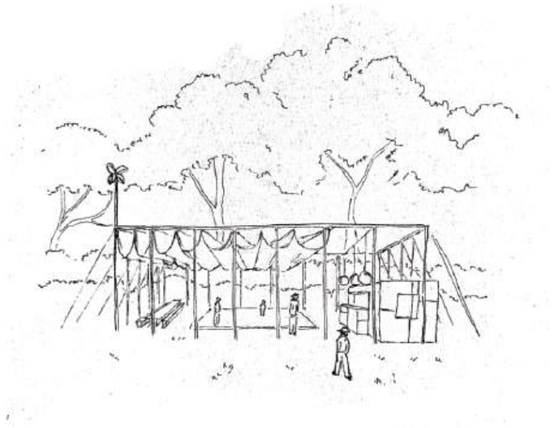


Figure 26. Garden pavillon as depicted on the card.

Nutrient Cycling in the Farming System

After finishing our shift in the kitchen, while the seminar was taking place, all the food scraps were piled up in the wheelbarrows. With the help of volunteers, we organized a collective scattering of the food scraps. While some were heading to the "Chicken Orchard", we headed over into the garden towards the research polytunnels, walking between the rows of beautiful prunus trees in bloom, past the steamy geodomes and glasshouse to reach the compost area. We uncovered the black plastic fabric, spread the food scraps in a line on the existing longitudinal compost pile, and mulched hay to cover and insulate the organic materials. The heat generated in those compost piles is due to the microorganisms decomposing scraps with the help of hay into nutritious soil again. Rainworms were abundant. Because some beds in the "Market Garden" were to be planted today, we drew fresh and earthy compost out of the older pile and walked over to the front of the "Glass House" where one of us picked up the seedlings thriving in the heat of the greenhouse. All set, we crossed the "Apple Orchard" and stared at the fulfilling scene; pumpkins, zucchinis, currants, apples, corn, and sunflowers were dancing harmoniously in the soft breeze. We crossed the gate and walked over to the "Market Garden", preparing the beds by spreading a layer of fresh compost and measuring the right spacing for the seedlings. Since this year, we have a new watering system connection from the "Washing Station" to the central water outlet in the garden. With water stored in cisterns, it's filtered before being used to water the freshly planted seedlings. Ducks, of course, enjoy the watering too and rush towards us to catch the mist and humidify their wings, quacking happily before going back to hunting slugs. Done with planting and tired from all the effort, we walked down the alley towards the tool shed where we put back the shovels as we crossed paths with other volunteering students who had just finished milking the cows. We were tempted to go hang out with them before biking home, but still decided to go over to the cows. As we walked along the soybeans, we noticed a class of students sitting in the grass close to the pond, drawing what seemed to be a section of the place. The sound of a tractor engine stopping tells us that a farmer of Alnarp's egendom had just finished their shift too. We waved at each other as we reached the cow pasture. Some walked slowly over to us, curious, while the rest lay under the cooling shade of the "Forest Lab" trees they fertilize.

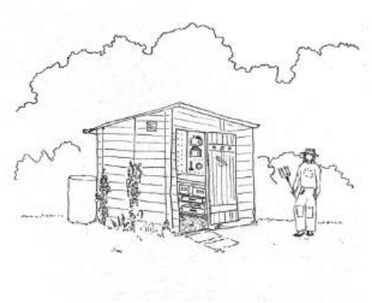


Figure 27. Tool shed as depicted on the card.

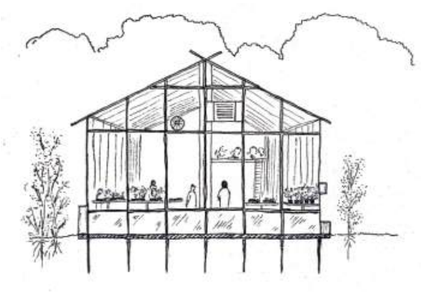


Figure 28. Glass house lab as depicted on the card.

Biological diversity towards research opportunities

After bringing the food scraps from lunch to the chickens, we were planning to take a walk around the different foodscapes to harvest samples from this week. With other students from plant biology, agroecology, and horticultural degrees, we became interested in studying the quality of the production coming from such diversified ecosystems and the influence of nutrient cycling, recording their quality over time. After collecting a few eggs and ripe fruits from the "Chicken Orchard", we headed over to the "Market Garden" to collect a few ducks' eggs. Before going out into the "Apple Orchard"for some apples and berries, we snacked on some hidden blueberries in the forest garden under the willow trees. They taste good this year. When we headed out to the prunus alley, we were astonished to see the number of butterflies and small insects buzzing over the summery meadow, almost hiding the presence of the "Herb and Flower Garden". As we made our way between the succession of flowers and herbal plants, the overwhelming smells were distracting us from reaching the few root vegetables we planted in between. It was getting warm, so we collected a few berries from the "Berry Alley" and entered the coniferous-dominated "Forest Lab #1" where we continued to harvest berries from the ground layer. On the other side of the forest, the secluded potato field was ripening, and we dug out, like hidden treasures, the first mid-season potatoes of the year. A few cows lying under the shade in their silvopasture seemed happy to be in our company; the rest of the herd was milked under a shelter across the pasture. We headed out towards the "Forest Lab #2", managed by landscape architecture students wishing to create a very dense and undisturbed environment to study its evolution before starting the coppicing and pruning processes. Walking along the cool gust flowing out of the forest, we went past the croaking sound of toads hidden in the reeds. Out into the "Experimental Fields", we quickly harvested a few soybeans and hemp seeds before returning to the "Glass House" where we could store our harvest in the cold storage room before the heat got to them. We headed to the "Office" while trying not to disturb the drawing class and went up the second floor into the meeting room to prepare for our lab session, still snacking on some extra blueberries.

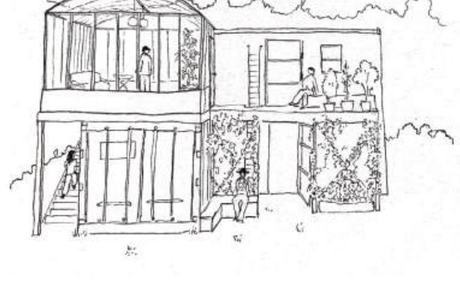


Figure 29. Office as depicted on the card.

Figure 30. Forest lab as depicted on the card.

REViEWED DESiGN

Throughout October 2025, the stakeholders of the study were shown the iteration of the participative design. They were given a few questions to reflect on and comment on as the last feedback loop of the project. The first aim was to make sure there were no misunderstandings between the semi-structured interviews and how their opinions and motivations were translated in my study. The second was to reach for further participation from stakeholders who didn't participate in the workshop, hence did not have a tangible vision of their contribution.

4.1 Reflective feedback

Overall, responsive stakeholders have expressed their keen interest regarding the proposed Design as their responses corresponded to what they had voiced during the interviews. Involving people from the start of the design process enhances their ties and engagement with the project.

The Design allows for multipurpose uses. Not belonging to the sole use of agricultural land, it becomes a public recreational and research facility as well as an ecological corridor. The Forest Ecology student shared their interest in having two different forest ecosystems, allowing for a variation of maintenance and production strategies (2025, RS), while Anh, was projecting potential plant breeding research on the experimental fields planted with potatoes, soybeans and industrial hemp (2025, RS). For Need, the idea of having an integrated recreational space would benefit not only the academic realm but also extends to the local inhabitants:

"The children and families can easily visit this place or even participate and gain first-hand experiences in farming and gardening. It would be wonderful if it could happen in the future."

(Need, 2025, RS)

For the researcher and local research station manager, the proposed design :

"has the potential to become both an attractive place to visit and a productive site for generating goods."

(Lönnstorp Research Station manager, 2025, RS)

supporting social and educational services within academic life. Mariana supported that

"Such a space would serve not only as a living laboratory but also as tangible evidence of an integrated and sustainable community system."

(Forero, 2025, RS)

Although receiving supportive feedback from stakeholders, the limited size (3 ha) of the field brought up some concerns. During the workshop, I had left open for participants the choice to place the programs wherever they felt suitable. The researcher in Biosystems and Technology :

"Would have preferred to see more areas or fields dedicated to agricultural or horticultural experiments. There are a few fields that could be suitable, but they appear to be quite small."

(Lönnstorp Research Station manager, 2025, RS)

Coming back to our discussion regarding the minimum size for leading research trials during our interview in Spring. This thought was also shared by the Forest Ecology student, uncertain about the size of and distance between the Forest Labs being enough to lead experiments (Student, 2025, RS).

As this project has been possible through an intricate collaboration with Alnarp's Farm, the boundaries of what exists for the farm today and what, in the new Design, is modified or added to the farm system or belongs to the Growing Lab, remain purposefully indistinct for reasons mentioned earlier. When looking at it from a municipal scale, the stakeholders expressed a wish to see the proposed Design as an integrated part of its locality. Dennis Andreasson would have wished to see how this proposed design takes into account

"which of these 'systems' would be additions to the current campus, i.e., which of these can't be found anywhere else and could really be of benefit to the campus landscape."

(Andreasson, 2025, RS)

Mariana Forero, on the other hand, shared certain boundaries of the design :

"I would like to explore ways to integrate Alnarp's egendom (property) rather than positioning it on the periphery."

(Forero, 2025, RS)

With the creation of a new experimental field comes a series of legal regulations to conform to. Dennis Andreasson mentioned that permission to build permanent infrastructure on agricultural land not being allowed (Andreasson, 2025, RS). Mariana Forero expressed her concern about the Forest Lab and the legal regulations surrounding it, referring to the tree plantation restrictions on agricultural land where only a specific category of trees is allowed (Forero, 2025, RS).

4.2 Lack of responsiveness

Concerning the stakeholders standing outside the farmers and academics categories, 4 out of the 5 interviewees failed to come back with their reflections on the proposed design. A big part of this study involved local participants to a degree where their opinions became integrated as an essential part of the design process. The most responsive stakeholders for reviewing the design have been involved either with living labs or the farm, by being part of the core team, volunteering, or in the present management of the studied field.

IV. DiSCUSS ON

Methodology

Participation from local actors of the landscape offered a constant renewal of perspectives, broadening the scope of understanding I got from studying this landscape over the seasons. Along with a better understanding came a constant tangible process of connecting people to their landscape.

Workshops, being something I had never led before, were a new process I had to learn while doing them. This opened a space for imagination as a collaborative process for user groups to interact with each other, sharing knowledge and stories for an imaginary project, but in real life. Cultivated creativity and vision, expressing the change they wish to see for our common future, made me realise the impact of giving equal space to stakeholders to voice their opinions. It would've been interesting to see who wrote down which note during the workshop, giving more data on why these specific cards came to be, why certain stakeholders think those things matter more, etc. Looking back, asking participants if they were feeling heard, going over the main areas with the group and noting together for which user group each area would be focused on, possible events or possible alternatives could have been explored.

Drawing the limit to a process which could keep improving over itself, though restricted within the time allowed to write my master's thesis, was a challenge. Participatory research also brought uncertainties related to the quality of the results gathered, one missing stakeholder, unanswered mail, and the proposal feels scarce. Across Europe, Nadin et al. (2021) observed that, though citizen involvement regarding landscape planning is supported by local decision makers, actual participation only engages those for whom the outcome will impact. This excludes unwillingly potentially impacted participants in the proposal, resulting in a design proposed within the boundaries of participation as a practice. This was especially the case when contacting policymakers, agency personnel, landowners, and academics, and students from different backgrounds.

Participant observation, on the other hand, as a non-selective method in terms of data collecting, had me fully immersed in the ongoing projects regarding Alnarp's farm as I became involved in the internal decision-making over the season. Working there as a summer employee gave me a reason to be immersed to the extent that my role as a researcher faded out. As a method, participant observation was asking for a lot in terms of engagement, taking off the researcher's cap to wear the participant's one, and blurring boundaries. As for the quality of data extracted compared to the other methods, though I have learned a lot in terms of social dynamics and values of the farm, it has been very time-consuming, and I would reconsider carefully.

According to these methods, the question of iteration came up multiple times: could I have stopped and presented my results after the card game was generated, after interviewing stakeholders? Or would the workshop growing lab iteration suffice to show a participative design process? To what extent, as a landscape architect, do I have to make decisions regarding the overall coherence for improving the design? How much to change, add, or take away from what participants did? As Martinez et al. (2014) advanced, these types of approaches: Iterative processes and participatory design, will inherently generate subjectivity and personal decision-making from the facilitators. This is due to the interpretation of the data and its "informal, contextual, and personal" nature of qualitative methods used in participative planning. The participatory workshops and iterative design processes were an important tool to engage in dialogue and envision future landscapes, confirming the observations of Ohta et al. (2024) and Escalera-Reyes et al. (2020) that community engagement enhances place-based attachment and belonging.
This became a reminder of the qualitative aspect of the data gathered. The evolving design of the site illustrates how qualitative and iterative approaches can generate complex yet adaptive landscapes, responding to local needs and future conditions. The design proposal is not a finished product; it is rather a tool to understand people's wishes and needs.

Results

This study has resulted in a set of multifunctional uses for an interstitial field, placed between research and production, to become a future agrarian laboratory opening social, ecological and educational perspectives. Collins and Konijnendijk (2010) emphasised the "social enhancement" resulting from the active participation of its future users, which seems relevant in such a student learning environment. We, as students, are to be trained to shape the societies of tomorrow, facing ever-growing challenges towards urbanisation, food sovereignty, land fragmentation and climate disruptions. A statement supported by Francesca et al. (2021), in order for future generations to understand the complexity of those issues, increasing students' resilience and capacity to adapt to a rapidly changing reality is needed. Overall, this study strengthens the argument presented in the introduction that reconnecting humans with landscapes through multifunctional, participatory approaches is essential for the resilience of agroecosystems and peri-urban foodscapes (Tilman et al., 2002; Foley et al., 2005; Gliessman, 2015). Multifunctional landscapes offer a scenario of different ways, as Haaland et al. (2011) argued, agricultural landscapes can achieve sustainability when ecological, social, and productive functions are integrated. The uniqueness of the site allowed for a diversity of activities, programs, wishes from local voices, and future plans to be voiced. By incorporating experimental, educational, and recreational activities in the agrarian realm, the project demonstrates a way to enhance biodiversity and ecosystem services (Foley et al., 2005; Tscharntke et al., 2012; Gliessman, 2015). However, the proposed design had become a combination of these activities, where uses and users meet, though possibly not being qualified as productive, research-focused or preserved enough for some stakeholders.
The main concern, to create these spaces giving opportunities for students to start going outdoors to experiment, is how to loosen the legal land-use restrictions in order to create hybrid types, mixing agriculture with forestry, recreation and educational space. This would require building permissions for infrastructures and planting permits for integrating more trees under the current "agriculture" land-use type. For now, the resulting functions would still go under residential, recreational, public, rural built up, rural agricultural, vegetation/forest and others, grazingland, transportation and communication and water bodies land uses, leaving out only 3 types of land use (Balasubramanian 2015). Seeking multifunctionality in peri-urban areas, as Cordato et al. (2024) and Altieri et al. (2015) mentioned, is valuable for reconnecting citizens with local food production, promoting multifunctional green infrastructure and landscape connectivity.

But this need to identify each surface of land and categorise it adds to the disagreements between local actors, which, in turn, if given space to explore the origins of tensions, enhances the need for each stakeholder to find more ways into collaboration. Land ownership is interconnected with the fragmentation of landscapes, as different actors are in charge of different land uses; the coherence of a biodiverse landscape is threatened.

The proposed design is anchored in existing planning processes of Lomma municipality's and SLU's future development plans to different degrees, though maintaining their active engagement was difficult at times. Decisions for the future campus are made to attract more visitors from neighbouring cities of Malmö and Lund and showcase to the public the abundance of research and innovation on campus. Yet, bottom-up student initiatives like Alnarp's farm were slow to start and are still tough to maintain today, as little support is offered from the university and they depend on collective student dedication and involvement. Alnarp's property, being itself a victim farm of the system it supports for its conventional management of agrarian landscapes, doesn't seem to be supported in sustainable ways.

Unveiling the socioeconomic veil of the local landscape took considerable time during this study. A lot is due to the complex bodies of actors I was faced with when considering SLU as one entity. The challenges I encountered when engaging with policymakers, landowners, and other stakeholders reflect the constraints identified by Rossi et al. (2023), of how industrialized and bureaucratically-managed landscapes prevent participatory approaches and limit opportunities for more sustainable management. SLU's property of land is much bigger than the Alnarp campus shows. As an entity, with all its different faculties, boards and deans, each with differing views on the matter of student initiatives and campus development plans, envisioning a common agreement within SLU is in itself laborious. An important number of research fields exist around Alnarp, and I had taken note of other projects too late in the study. Throughout the study, the absence of a project manager in SLU's development plan to promote student initiatives and innovations was felt. However, the ties with SLU could be twice as beneficial for initiatives and land access to be facilitated, and for SLU to broaden its experiments, leading to more transdisciplinary research publications and becoming a supportive body for achieving sustainability goals through multifunctional spaces. Some stakeholders, too, were mentioned too late in the process; their participation could have brought more insight into the proposal. Thinking of the Dean and Vice Dean of SLU Alnarp campus, and the Operations Coordinator of the existing student Garden Laboratory. I would've, when given more time and capacity, encouraged the participation of reluctant parties to voice their opinions as well.

Conclusion

This thesis supported a community-oriented approach to iterate several participatory processes, resulting in a co-created proposal for an integrated project for its users. Together with the participants of this study, I illustrated the proposed design of a 3-hectare agricultural field in a peri-urban context, seeing its evolution become more complex and multifunctional as more people contributed with their ideas and opinions. The participation of local stakeholders has, through individual and collective dialogues, brought new aspects of multifunctionality in the study by enabling a range of knowledge and skills to be part of the proposal. Focusing on the interactions of people with the landscape more than with the design itself, which represents in the end a summary of ideas and how people collaborated.

By expressing needs relating to their specific skills and professions, stakeholders bring to the table a variety of proposals that see aspects that would have otherwise excluded during the designing process. It brought an understanding of different needs, purposes and visions for the locality, accepting that the project lies in a bigger landscape bound to change in the future, with a big portion of uncertainty for Alnarp's farm, Lomma municipality, SLU, its facilities and its property. Participants outside the realms of landscape architecture were valued for their divergent thinking, showing that transdisciplinarity can open new discussions around combining uses and functions in a common landscape. The process demonstrated the strong wish from participants to see the local landscape satisfy more needs than it currently does, underlying the impact of socioeconomic dynamics in the landscape. This would allow more visibility on the sustainable goals of SLU, environmental issues the municipality is putting efforts into mitigating and supporting local food systems grown using gentle practices for humans and for nature. On the other hand, this study came to show that a participatory design, due to time and space constraints and generally lacking public interest, will never be fully participatory nor will it satisfy all the participants to the fullest extent.

It reinforced a transdisciplinary approach to developing frameworks to tackle today's food and biodiversity crisis through project design. Landscapes are shaped by their community and its ideal design to satisfy each use. In a world where food is disconnected from our landscapes, ownership of land divides people, pushes back biodiversity and silences nature's voice, the need to observe the landscape from different perspectives, listen to the local needs, and adapt throughout the process becomes necessary. Fewer boundaries for more porosity, less monocultures for more diversity, of plants, of studies, of interactions, of uses, of production, of people. As Mariana said well during her interview:

"We are here to work, research, study, grow, eat and be together."

(Forero, 2025, SSI)

Further Research

The attribution of "multifunctional" land use labels regarding agricultural land is still new and would benefit from being further explored. The role of peri-urban municipalities can become important in providing spaces to support the connectivity of green recreational spaces to food production systems; a potential collaboration with the municipality to find strategic project sites for multifunctional landscapes could help in their decision-making. A study exploring what is currently on campus, how it came to be the way it is today and the reason why projects emerge and die out would be useful to co-create with the existing design proposal for future planning. The analysis of the multifunctional landscapes of the future SLU Campus in Alnarp would be interesting to reflect on with the stakeholders interviewed, generating more ideas on future projects. In general, exploring more ways to engage with more local participants, using more time to gather stakeholders around a table and making them question the issues of multifunctional systems would allow for a deeper level of transdisciplinarity in the process.

Researcher's role

As a student in landscape architecture, getting more involved in a farming community with a participative approach to design and planning, while at the same time feeling a strong sense of belonging to the farming community, my role as an objective researcher is debatable in some cases. It felt at times like having different caps on, having a genuine interest in small-scale farming practices, but wanting to hear about the different opinions of one place, I sometimes found myself in between two chairs, and had to think twice about the boundaries which separated those different roles and responsibilities. Nevertheless, the qualitative data is documented throughout the process to allow for an analytical transparency of the local landscape. Finding a balance in reflexive transparency was a challenge and can have an influence on the outcome of this study.

I have also realised how my role moved from observant to facilitator of group interactions amongst stakeholders, where my presence was not there to judge and lead but to hear the different points of view, which brought back many positive insights.

The methods used for this study have led me to rethink the design process, turning it into a collaboration and dialogue with the reality of a place, rather than an analytical and artistic move of one's concepts and ideals. Participant observation and field visits have contributed to constantly revising the choice of different programs relevant to the project and its users. Over time, this project became not only the result of my own reflections and findings, but a collective work reflecting the locals' needs and dreams. I realised how diverse and rich discussions can be when it comes to taking a collective decision, how much energy is invested in making sure everyone feels heard and included in the process. But especially how much these exchanges left me with a broadened perspective on prior knowledge I had taken for granted.

Landscape architect taking on a facilitator role, not imposing their opinion but rather giving voice to the local community, is a new skill I've had to learn while leading this study, ending my studies at SLU by learning something which seemed important to practice as a landscape architect in the future.

I am thankful for SLU programs allowing for cross-disciplinarity in the choice of courses to study during this Master's, getting to learn more about Agroecology and food systems with a Landscape Architecture background.

V. REFERENCES

TEXT REFERENCES

Adema, P. (2009). Garlic capital of the world: Gilroy, garlic, and the making of a festive foodscape. Univ. Press of Mississippi

Allievi, F., Massari, S., Recanati, F., & Dentoni, D. (2021). Chapter Twelve – Empathy, food systems and design thinking for fostering youth agency in sustainability: A new pedagogical model. In S. Massari (Ed.), Transdisciplinary Case Studies on Design for Food and Sustainability (pp. 197–216). Woodhead Publishing. https://doi.org/10.1016/B978-0-12-817821-8.00014-X

Altieri, M. A. (1996). Agroecology: The Science of Sustainable Agriculture (2nd ed.). Boca Raton, FL: CRC Press.

Altieri, M. A., & Nicholls, C. I. (2005). Agroecology and the Search for a Truly Sustainable Agriculture. United Nations Environment Programme.

Altieri, M. A., Nicholls, C. I., Henao, A., & Lana, M. A. (2015). Agroecology and the design of climate change-resilient farming systems. Agronomy for Sustainable Development, 35(3), 869–890.

Balasubramanian, A. (2015). Categories of landuse. University of Mysore.

Ballon, P., & Schuurman, D. (Eds.). (2015). Living labs: concepts, tools and cases. Emerald.

Bergquist, D., Hempel, C., & Green, J. (2019). Bridging the gap between theory and design: A proposal for regenerative campus development at the Swedish University of Agricultural Sciences. International Journal of Sustainability in Higher Education, 20. https://doi.org/10.1108/IJSHE-04-2019-0143

Biundo, L. P. (2024). Enhancing Biological Soil Health through Land Management Change.

Boyd, J., & Banzhaf, S. (2007). What are ecosystem services? The need for standardized environmental accounting units. Ecological Economics, 63(2–3), 616–626.

Burgess, R. (1984). In the Field: An Introduction to Field Research. London: Allen and Unwin.

Codato, D., Grego, D., & Peroni, F. (2024). Community gardens for inclusive urban planning in Padua (Italy): implementing a participatory spatial multicriteria decision-making analysis to explore the social meanings of urban agriculture. Frontiers in Sustainable Food Systems, 8. https://doi.org/10.3389/fsufs.2024.1344034

Collins, K., & Konijnendijk, C. C. (2010). Room to grow: facilitating meaningful participation within urban forestry processes and structures. In Forestry serving urban societies in the North Atlantic region (pp. 75–92). Nordic Council of Ministers.

DeWalt, K. M., & DeWalt, B. R. (2011). Participant Observation. Walnut Creek, CA: AltaMira Press.

DeWalt, K. M., DeWalt, B. R., & Wayland, C. B. (1998). Participant Observation. In H. R. Bernard (Ed.), Handbook of Methods in Cultural Anthropology.

Eriksson, M., Giovannini, S., & Ghosh, R. K. (2020). Is there a need for greater integration and shift in policy to tackle food waste? SN Applied Sciences, 2(8), 1347.

Escalera-Reyes, J. (2020). Place attachment, feeling of belonging and collective identity in socio-ecological systems. Sustainability, 12(8), 3388.

Foley, J. A., DeFries, R., Asner, G. P., et al. (2005). Global consequences of land use. Science, 309(5734), 570–574.

Fors, H., Berlin, A., Gottlieb, U., et al. (2024). Interdisciplinary insights into navigating the maze of landscape multifunctionality. People and Nature, 6(2), 519–534.

Gliessman, S. R. (2014). Agroecology: The Ecology of Sustainable Food Systems. CRC Press.

Gliessman, S. R. (2015). Agroecology: The Ecology of Sustainable Food Systems. CRC Press.

Gordon, A. M., Newman, S. M., & Coleman, B. (Eds.). (2018). Temperate Agroforestry Systems. CABI.

Gustavsson, R. (2023). Woods go urban: Three Landscape Laboratories in Scandinavia.

Gutiérrez-Briceño, I., García-Llorente, M., Turkelboom, F., et al. (2024). Towards sustainable landscapes. Environmental Science & Policy, 160, 103831.

Haaland, C., Fry, G., & Peterson, A. (2011). Designing farmland for multifunctionality. Landscape Research, 36(1), 41–62.

Ilieva, R. T., Cohen, N., Israel, M., et al. (2022). The socio-cultural benefits of urban agriculture. Land, 11(5), 622.

Karlsson, A., Guillén, L. A., & Brukas, V. (2024). Regional forest green infrastructure planning and collaborative governance. Environmental Science & Policy, 160, 103840.

Kyrö Wissler, S. (n.d.). Campus Plan Alnarp 2025–2045. SLU. Retrieved January 17, 2026.

Lee, H., Calvin, K., Dasgupta, D., et al. (2023). Climate Change 2023: Synthesis Report. IPCC.

Lenzholzer, S., Duchhart, I., & Koh, J. (2013). Research through designing in landscape architecture. Landscape and Urban Planning, 113, 120–127.

Loconto, A. M., & Fouilleux, E. (2019). Defining agroecology. International Journal of Sociology of Agriculture and Food, 25(2), 116–137.

Lovell, S. (2022). Beyond food production. Acta Horticulturae, 1356.

Lovell, S. T., Stanek, E., & Revord, R. (2021). Agroforestry integration. In Agroforestry and Ecosystem Services (pp. 451–476).

Luz, F. (2000). Participatory landscape ecology. Landscape and Urban Planning, 50(1–3), 157–166.

Martinez, M. E., Peterson, M., Bodner, M., et al. (2014). Music training and mathematics achievement. In Handbook of Design Research Methods in Education (pp. 414–427).

Massari, S. (2021). Transdisciplinary case studies on design for food and sustainability. Elsevier.

Masson-Delmotte, V., Zhai, P., Pirani, A., et al. (2021). Climate Change 2021: The Physical Science Basis. IPCC.

Mitchell, C., Cordell, D., & Fam, D. (2015). Beginning at the end. Futures, 65, 86–96.

Mitchell, C., Fam, D., & Cordell, D. (2018). Frameworks for transdisciplinary research. GAIA, 27(1), 112.

Nadin, V., Stead, D., Dąbrowski, M., & Fernandez-Maldonado, A. M. (2021). Integrated, adaptive and participatory spatial planning. Regional Studies, 55(5), 791–803.

Nicolescu, B. (2006). Transdisciplinarity: past, present and future. Moving Worldviews, 142–166.

Nijhuis, S., & de Vries, J. (2019). Design as research in landscape architecture. Landscape Journal, 38(1–2), 87–103.

Nohl, W. (2001). Sustainable landscape use and aesthetic perception. Landscape and Urban Planning, 54, 223–237.

Noordwijk, M. van. (2020). Agroforestry as nexus of sustainable development goals. IOP Conference Series.

Ohta, R., Yakabe, T., Adachi, H., & Sano, C. (2024). Community dialogue and loneliness. Cureus, 16(4).

Ott, J. (2024). World Bank world development reports. In Encyclopedia of Quality of Life and Well-Being Research (pp. 7858–7859).

Pe'er, G., Dicks, L. V., Visconti, P., et al. (2014). EU agricultural reform fails on biodiversity. Science, 344(6188), 1090–1092.

Plieninger, T., Bieling, C., Ohnesorge, B., et al. (2013). Exploring futures of ecosystem services. Ecology and Society, 18(3).

Rossi, E. S., Materia, V. C., Caracciolo, F., et al. (2023). Farmers in the transition toward sustainability. Frontiers in Sustainable Food Systems, 7.

Sanger, J. (2002). The compleat observer? Routledge.

Taylor, K., & Francis, K. (2014). New cultural

landscapes (pp. 24–40).

Tilman, D., Cassman, K. G., Matson, P. A., et al. (2002). Agricultural sustainability. Nature, 418(6898), 671–677.

Trocchianesi, R. (2022). Design Narrative. In International Conference Design! OPEN (pp. 603–610).

Tscharntke, T., Clough, Y., Wanger, T. C., et al. (2012). Global food security and biodiversity. Biological Conservation, 151(1), 53–59.

Ulén, B., Bechmann, M., Øygarden, L., & Kyllmar, K. (2012). Soil erosion in Nordic countries. Acta Agriculturae Scandinavica, 62(sup2), 176–184.

Vonthron, S., Perrin, C., & Soulard, C. T. (2020). Foodscape. PLOS One, 15(5), e0233218.

Wei, X., Widgren, M., Li, B., et al. (2021). Dataset of 1 km cropland cover. Earth System Science Data, 13(6), 3035–3056.

WEBSiTE REFERENCES

Agricultural land use 2025. Final statistics. (2025, October 22). Jordbruksverket.se. Retrieved November 21, 2025, from https://jordbruksverket.se/om-jordbruksverket/jordbruksverkets-officiella-statistik/jordbruksverkets-statistikrapporter/statistik/2025-10-22-jordbruksmarkens-anvandning-2025.-slutlig-statistik

Alnarp Landscape Laboratory | Slu.se. (n.d.). Retrieved January 16, 2026, from https://www.slu.se/en/about-slu/organisation/faculties/faculty-of-landscape-architecture-horticulture-and-crop-production-sciences/resurser/alnarps-landskapslaboratorium-en/

Alnarps Egendom: Medarbetarwebben. Slu.se. (n.d.). Retrieved January, 2026, from https://internt.slu.se/Organisation-och-styrning/organisation/gemensamma-verksamhetsstodet/egendomsavdelningen/alnarps-egendom/

CAP at a glance. (2023, January 14). Agriculture and Rural Development. Retrieved February 21, 2025, from https://agriculture.ec.europa.eu/common-agricultural-policy/cap-overview/cap-glance_en

Nature-based solutions research policy. (2023, July 10). European Commission. Retrieved March 15, 2025, from https://research-and-innovation.ec.europa.eu/research-area/environment/nature-based-solutions/research-policy_en

Sustainable food in Malmö. (2023, November 28). Malmö Stad. Retrieved March 17, 2025, from https://malmo.se/Welcome-to-Malmo/Sustainable-Malmo/Sustainable-Lifestyle/Sustainable-food-in-Malmo.html

Swedish Forest Industries. (2025, November 18). Forest and forestry – Swedish Forest Industries Federation. Retrieved February 21, 2025, from https://www.forestindustries.se/forest-industry/statistics/forest-and-forestry/

The project | Alnarp's Farm. (n.d.). Retrieved April 12, 2025, from https://www.alnarpsfarm.se/the-project

ORAL REFERENCES

Andrew Gallagher, Doctoral student at SLU Future Foods. 6th March 2025.

Anh, Master Student at SLU Plant biology for sustainable production. 20th March 2025.

Dennis Andreasson, Doctoral student at SLU Landscape Architecture, Planning and Management. 23rd May 2025.

Håkan Schroeder, Executive Director at SLU Partnership Alnarp at the Unit for collaboration and development, 15th April 2025.

Helena Björn, Environmental strategist at Lomma Municipality Strategy Department. 20th March 2025.

Researcher and Lönnstorp Station manager at SLU Biosystems and Technology. 25th April 2025.

Mariana Forero, Chairperson at Alnarp's Agroecology Farm. 18th April 2025.

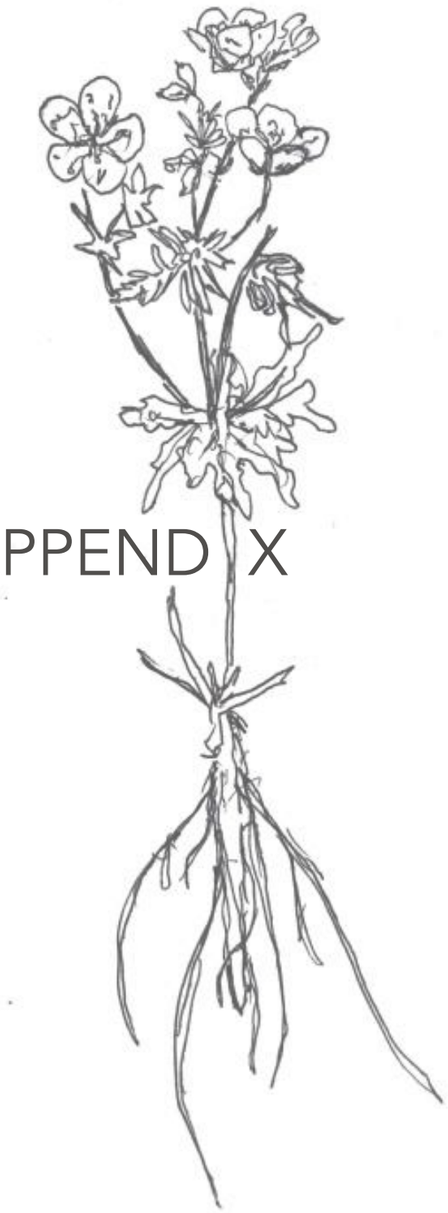
Master Student in SLU Forest Ecology and Sustainable Management. 26th April 2025.

Need, Master student at SLU Food & Landscape. 16th May 2025.

Scott Wahl, Teacher at SLU Landscape Architecture, Planning and Management. 25th April 2025.

Vicoria Thuillier, Agricultural manager at SLU Department of Estates and Management. 16th April 2025.

VI. ANNEXES & APPEND IX



CARDS & PROGRAMS

1

HEDGE

AREA

surface area: 3000m2

orientation: North / East (for less shading of the other areas

area: easily accessible area

accessibility: pedestrian & public accessible path

Used for experimentation of planting designs, recreation and agroforestry.

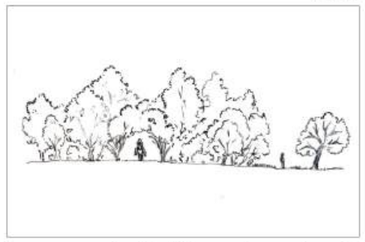
The hedge would be an openly accessible path for people to use as an alternative to Sundsvägen. It is also inviting access to the entire Growing Lab. Future possibilities to extend it further down the road to link the Landscape Lab and SLU campus?

Acting as a windbreak and a soundproofing hedge from Sundsvägen.

1

HEDGE

AREA



surface area: 3000m2

orientation: North / East (for less shading of the other areas

area: easily accessible area

accessibility: pedestrian & public accessible path

Used for experimentation of planting designs, recreation and agroforestry.

The hedge would be an openly accessible path for people to use as an alternative to Sundsvägen. It is also inviting access to the entire Growing Lab. Future possibilities to extend it further down the road to link the Landscape Lab and SLU campus?

Acting as a windbreak and a soundproofing hedge from Sundsvägen.

1

POND

WATER BODY

surface dug area: 300m2

orientation: no preference

area: lowest elevation

accessibility: no preference

Used to collect excess water runoff from surrounding areas.

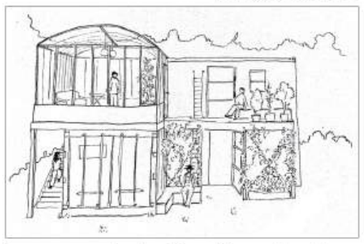
Having a water body as part of the project allows for new species of plant and animals to find their ecological niche. Amphibians and insects, as well as birds find food and habitat in such conditions!

Digging out a hole and letting the pond fill up with water from washing station, and naturally with time.

2

OFFiCE & OPEN SPACE

INFRASTRUCTURE



surface built area: 100m2

orientation: no preference

area: central

accessibility: visitor accessible path

Used for office work and/or various group activities related to field work.

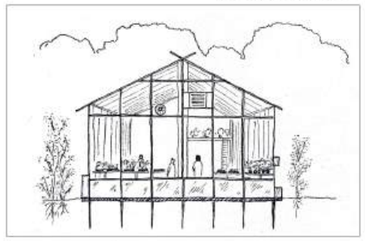
Multi-purpose indoor space allowing for a range of functions of various types of social (gatherings, exhibitions) and educational events (lectures, workshops, seminars).

Sourcing materials locally, participative building project, non permanent structure.

2

GLASS HOUSE LAB

INFRASTRUCTURE



surface built area: 300m2

orientation: sunlight all day long

area: flat-proximity to market garden

accessibility: vehicle accessible path

Used for experimentation and seed propagation.

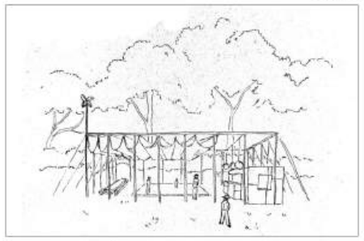
Environment for students to explore innovational ideas on site, and for Alnarp's farm to have access to close infrastructure for propagation, cultivation and seed banking.

Indoor space with cold room.

2

GARDEN PAViLiON

AREA



surface area: 200m2

orientation: sunlight all day long

area: semi-open

accessibility: vehicle accessible path

Used for experimentation and gatherings.

Semi open area with outdoor kitchen, as part of experimental building and planting designs on site.

Landscape multifunctionnality: kitchen, outdoor exhibition area, festival area.

1

FOREST LAB #2

AREA

1

FOREST LAB #1

AREA

surface area: 5000m2

orientation: North / East (for less shading of the other areas

area: no preference

accessibility: vehicle accessible path

Used for experimentation of planting designs, forestry and agroforestry.

Usually separated topics - landscape experimentation combined with food production in a forested system, which is also used for production of trees' byproducts could become a new form of mutlifunctional landscape.

Shared area for students from different programs to experiment on.

2

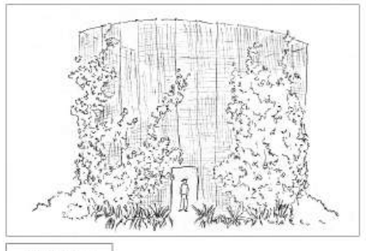
EXPERiMENTAL GARDEN #2

AREA

2

EXPERiMENTAL GARDEN #1

AREA



surface area: 200m2

orientation: according to preeference

area: according to preference

accessibility: according to preference

Used for experimentation and innovation.

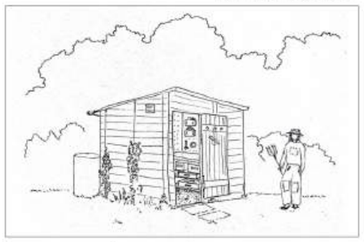
Big open area for students to explore planting designs on site.

Landscape multifunctionnality: landart, outdoor exhibition area, festival area.

2

TOOL SHED

INFRASTRUCTURE



surface built area: 10m2

orientation: no preference (visible)

area: strategic to usage

accessibility: easily accessible

Used for storage of tools.

Tool sheds are going to be increasingly needed around the Growing Lab as experiments evolve throughout the season. Having a small protected structure saves a lot of commuting time!

Furnished with electricity and water (comes with a compost toilet)

3

PLAY

AREA

surface area: 50m2

orientation: shaded, protected from wind

area: according to preference

accessibility: meeting point of paths

Used to play under a protected or open space.

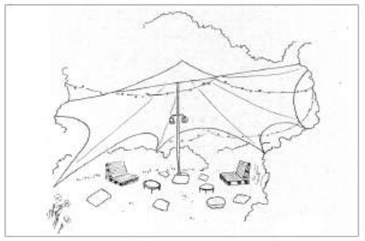
Having a central place to gather and play allows for students and other user groups who don't usually meet to wind down and take a break from physical work. The social aspects of such projects is to be prioritized to create good working conditions!

Sourcing materials locally, participative building project, non permanent structure.

3

HANGOUT

AREA



surface area: 50m2

orientation: sunlight, protected from wind

area: central

accessibility: meeting point of paths

Used to gather and hangout under a protected and open space.

Having a central place to gather and rest allows for students and people who don't usually meet on site to wind down and take a break from physical work. The social aspects of such projects is to be prioritized to create good working conditions!

Mutli-functional open area for events.

STAKEHOLDERS iNTERViEW

Stakeholder	Group	Role	Department	Interests	Expectations	Motivations for change
Victoria Thuiller	Agency personnel	Agricultural manager	SLU Department of Estates and Management	Own and manage land for SLU as part of research infrastructure	Prioritize long term experiments with data collection over decades	Enhance environmental efficiencies or actions for biodiversity on large scale conventional farmland
Scott Wahl	Academics	Teacher	SLU Landscape Architecture, Planning and Management	Regenerative and multifunctionnal landscapes around the university	Transition slowly but radically to another way of managing the land around campus, full support of SLU, programs merging and keeping the project rolling	Shows the example for more regenerative farming, even on large farming areas, as a unversity
Need	Student	Master Student	SLU Food & Landscape	Promote sustainable food & education	Link theory to practical work, integrate more agriculture in spatial planning	Impact future food policies regarding waste managment & ecosystem services relating to agriculture
Mariana Forero	Farmer	Chair person	Alnarp's Agroecology Farm	Community engagment for local groups (students, residents, SLU)	Break down silos within SLU and promote interdisciplinary collaboration at the farm. Convincing reluctant parties	Integrating agroecology with other disciplines, long term vision of the farm
Researcher and Sation manager	Academics	Researcher and Lönnstorp Station Manager	Biosystems and Technology	Leading research trials on SLU land which are part of SITES	Longer terms research, taking into account how many years/decades areas need to label agricultural land as 'organic' etc.	Integrating sustainable practices from both organic and conventional farming, highlighting the educational potential of the research landscape.
Helena Björn	Policy maker, regional planner	Environmental strategist	Lomma Municipality strategy	Setting up protected areas in a comprehensive plan of the municipality	connect the different protected areas with green corridors, or I call them ecological corridors. Include more water management into agricultural irrigation, turn to nature based solutions	Biodiversity and recreation, landscape connectivity
Hakan Schroeder	Academics	Executive Director at SLU Partnership Alnarp	The Unite for collaboration and development	Change current land managment around campus to become more multifucntionnal and inviting to research, education and innovation in collaboration	more contact and involvment of Alnarp´s egendom by a developed assignment and organisation	Research, education and societal impact by knowledge and innovation. An attractive SLU Campus supporting sustainability.
Dennis Andreasson	Academics	Doctoral Student	Faculty of Landscape Architecture, Horticulture and Crop Production Sciences	"Living Lab" approach for Alnarp's campus development and planning processes.	Long term vision for small projects around campus to be documented and supported by SLU	"Gather people and ideas for an integrated and experimental campus landscape"
Anh	Student	Master Student	SLU Plant biology for sustainable production	Plant breeding and computational simulation	More support from SLU increasing flexibility in the options between lab work, lectures, or field-based experimentation	Learn by experimenting and interacting with the growing environment
Andrew Gallagher	Academics	Doctoral Student	SLU Future Foods	Integrating food system challenges into municipal planning practices for societal and ecological benefits	More transition in the food systems to be framed in policy objectives of SLU	Improving municipality engagment and impact in their local food system
Student	Student	Master Student	SLU Forest Ecology and Sustainable Management	boreal forest management in view of Climate change mitigation	Conducting experiments on larger scale forested land to study impact on ecology	Carry out long-term sustainable timber harvesting , emphasizs on forest ecosystems' importance

Table 2. Stakeholders interviewed along with the main takeaways for our discussions.

ORiGiN OF PROGRAM FOR CARDS

Stakeholder	Method used	Interests	take away	Program generated	Land use category (according to table 1)
Mariana F. (AAF)	Semi structured interview	make office tasks on site possible	heated space	Office & open space	2. Rural Built-up, Community Halls
Student (SLU)	Semi structured interview	long term sustainable timber harvesting	different scales and diverse forestry	Forest lab	4. Forest, open Forest
Helena B. (Lomma)	Semi structured interview	connecting & creating protected green areas	protection areas for biodiversity	Meadow	4. Vegetation, Grazing Land
Dennis A. (SLU)	Semi structured interview	Living lab experimentation campus	gather people and ideas	Garden pavillion	2. Rural built-up, Cultural Complex
Anh (SLU)	Semi structured interview	diversify research opportunities	outside of lab experimentation	Experimental garden	3. Rural Agricultural, Plantation
Mariana F. (AAF)	Semi structured interview	practicality and access to tools	shared storage	Tool shed	2. Rural built-up, Huts and hamlets
Helena B. (Lomma)	Semi structured interview	enhancing the recreational aspect of nature areas	exploring a multifunctional foodscape	Play area	1. Recreational Built-up Land, Playground
Mariana F. (AAF)	Semi structured interview	put forward the interdisciplinarity of students	community space outside of class	Hangout area	1. Recreational Built-up Land, Playground
Farmers (AAF)	Participant observation	propagation and nursery	indoor heated space for nursing	Glass house Lab	3. Rural Agricultural, Plantation
Farmers (AAF)	Participant observation	protect crops from intense wind	wind proof hedge on edges of the field	Hedge	3. Rural Agricultural, Plantation
Farmers (AAF)	Participant observation	aquatic ecosystem and water runoff area	water retention during heavy precipitation	Pond	6. Water bodies, Pond
Participant	Participative design workshop	integrating future campus design	more visibility from campus	New entrance	5. Transportation, road
Participant	Participative design workshop	alternative way along the road	pedestrian alley and berry bushes	Berry bush alley	3. Rural Agricultural, Plantation
Participant	Participative design workshop	more animals	summer grazers and cows	Pasture with cows	4. Vegetation, Grazing Land
Participant	Participative design workshop	more animals	apples and mobile hens	Chicken coop in orchard	3. Rural Agricultural, Plantation
Participant	Participative design workshop	attract new customers	selling point	market stand & self pick	1. Commercial Built-up Land, Market yard
Farmers (AAF)	Participant observation	winter crops and indoor areas	alternative to plastic polytunnel	Geodomes	3. Rural Agricultural, Plantation
Farmers (AAF)	Participant observation	reuse water used for washing vegetables	filtration closed loop system	Cistern	6. Water bodies, Reservoir tank
Farmers (AAF)	Participant observation	prolongate the gap between harvesting and eating	indoor cooled space for storing	Cold storage room	2. Rural built-up, Huts and hamlets
Farmers (AAF)	Participant observation	diversify production	open new areas for aesthetic qualities	Herb & flower garden	3. Rural Agricultural, Plantation
Farmers (AAF)	Participant observation	host more students and interns	indoor heated space for housing	Accomodation	2. Rural built-up, Huts and hamlets
Farmers (AAF)	Participant observation	transform raw ingredients on site	selling point	Farm café	2. Rural built-up, Huts and hamlets

Table 3. Participants and their interests leading to the choice of programs for the cards from their emergence before the workshop (blue), and during the workshop (green) and design proposal during the workshop (purple) and after (orange).

WORKSHOP RESULTS' MAP

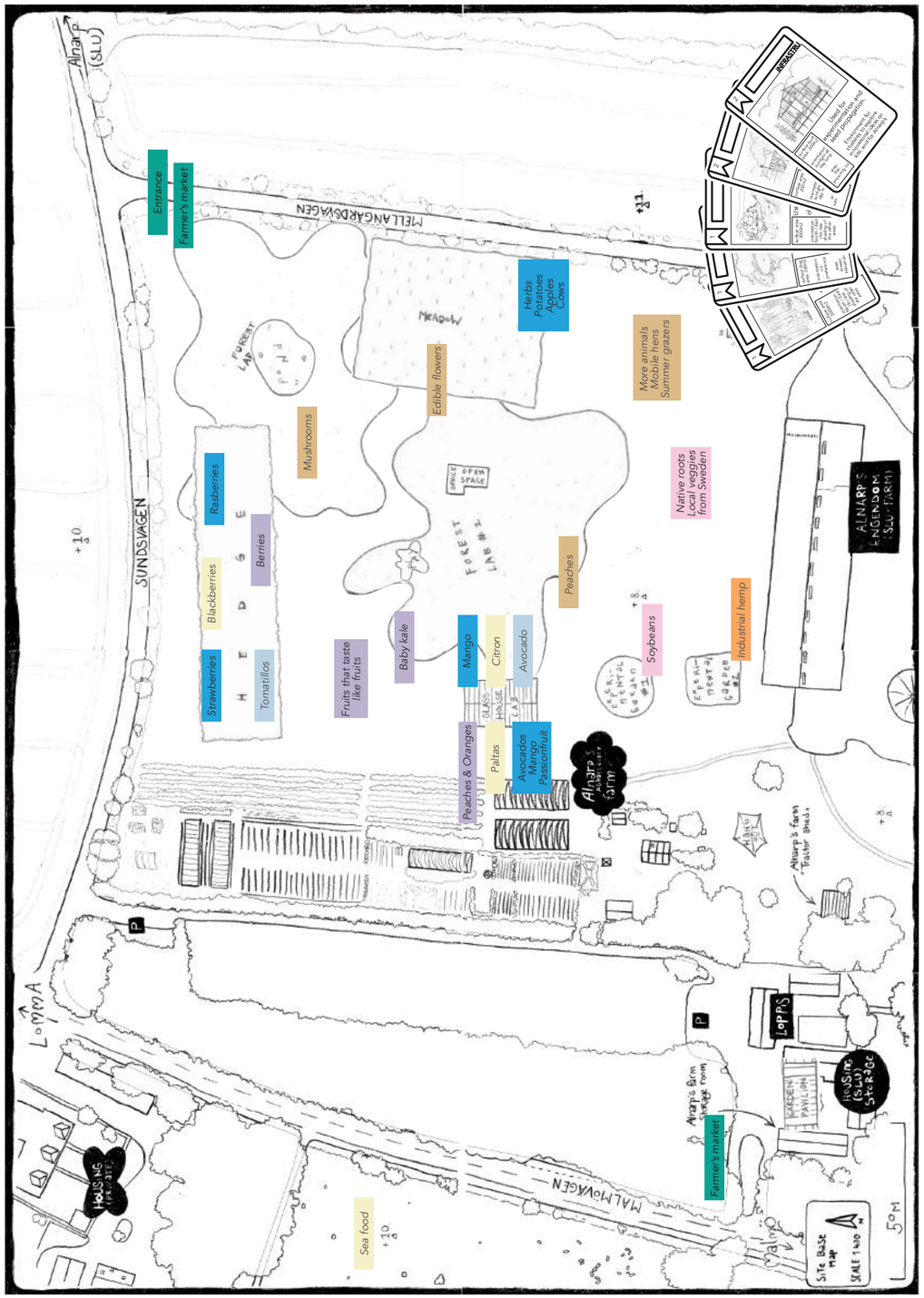


Figure 23. Results of the Participatory Design Workshop: after having placed their card programs, participants connected their answers from the first question to the possible locations. (available in bigger size on Annex 4 p.82)

SEMi STRUCTURED iNTERViEW GUiDE

1. Introducing the research, my role in the participatory approach, and my involvment with Alnarp's agroecology farm.

2. Emphasising on the qualitative aspect to hear from their experience interacting with the local landscape.

3. Explaining how the SSI is part of a set of iterative tools, will be used for the workshop, and will lead to a design process and proposal.

4. Asking for concent to record the SSI and use the information given. Asking wether they wish to remain anonymous or if their name can be used in the paper.

Showing a map of the site, where it is located in the municipality, and explaining the ongoing projects and eenvironments around the site.

5. Explaining how they can take part in the study, inviting them to participate in the workshop later in the season, as well as comment back during a review session at the eend of the season.

6. Open-ended questions:

- What role do you have , where are you located in the SLU bubble? How do you describe you relationship to the municipality, SLU, Alnarp's property, and Alnarp's agroecology farm?
- Who owns the land around here? How is it managed?
- What are the important aspects of the landscape you are specialised in? How have things evolved since their establishment? What is the general trend? How is their future looking like?
- What is, for you, a key aspect to improving relationships between academic , research institutions, municipality, and local farmers?
- In relation to food security and risk preparedness (in the face of potential crisis), how are you working towards environmental goals ? Relating to SDGs.
- How would you describe your relationship to food, agriculture and the local landscape? Is there a sense of community
- What does Multifunctionality mean to you? What does your ideal landscape look like if the future landscapes were to be used in diversified ways?
- How can we facilitate collaboration between other stakeholders ? Who is involved and who isn't ? Who needs to be convinced by this model ?
- Are you involved in local projects, organisations, or people who would be interested in participating in this study?

REViEW SESSiON GUiDE

1. Briefly recap of the evolution of the research since our SSI:

- Explanining in further detail how the Workshop went, how the cards were used by participants.
- Showing the Workshop Result map (Annex 4).
- A present state map was drawn from on site observations to give better understanding Alnarp's farm current system (Figure 18).

2. Presenting the design proposal (Figure 24) explaining the different design narratives.

3. Coming back on topics discussed during SSI with each stakeholder as reminder.

4. Coming back on the results from processing the SSI sorted by group, role, department, interests, expectations, and motivations for change. Ask if they validate the information or wish to reiterate. Ask if they wish to remain anonymous.

5. Asking about how the results are perceived according to the topics mentionned in 3.

6. Asking about in what, in terms of content, should change to improve the design.

7. Explaining how these comments will be combined with other stakeholders in aim to propose a design more suitable in its multidisciplinarity.

Redirecting the stakeholders for more specificity around the proposal's opportunities for them regarding the local mutlifunctionality if they need more clarification.

Figure 31. Alnarp's farm team (not complete) during the summer 2025. Photo credits : Eka Cang.