SOIL HEROES SHOWCASE FARM FOR LARGE-SCALE REGENERATIVE ARABLE FARMING

Klompe Landbouw

The Klompe Farm is a third-generation Dutch family farm located on the island of Hoeksche Waard, just 20 km south of Rotterdam. To date, in Europe, regenerative farming practices are most often experimented on small-scale farms (< 10 hectares). Out of the 360 hectares of the Klompe Farm, 100 hectares are farmed regeneratively, which makes it one of the largest experiments for regenerative farming in Europe.

Some of the fields are 7 years into the transition to regenerative farming while some others are in their first year of transition. Every year, regenerative practices are implemented on new plots.

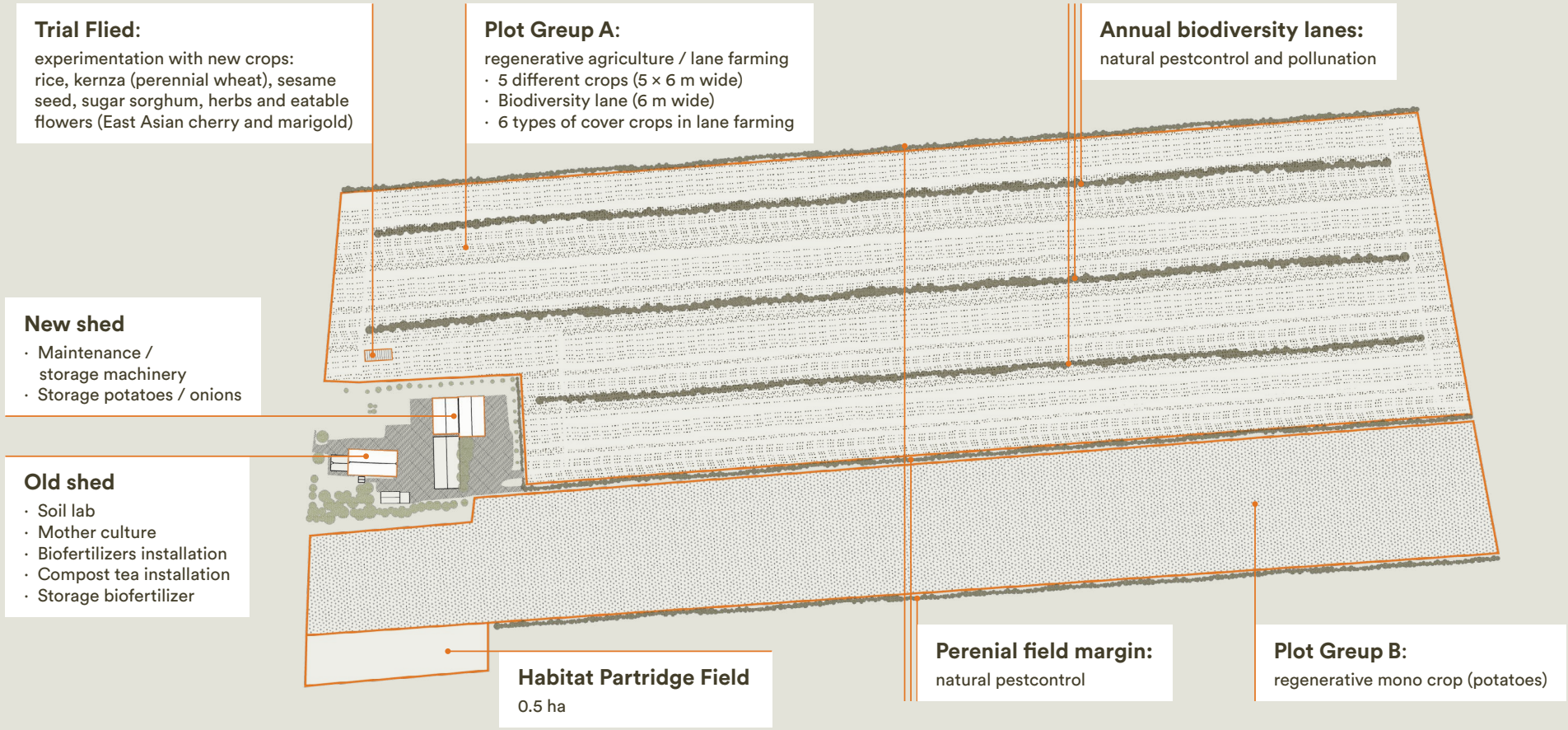
The level of innovation in technology and machinery is quite advanced. The owners use drones, a wide variety of sensors, high-quality machinery, GPS and satellite images to support better decision-making in their farm management plan.

While the Klompe Farm is still defined as conventional, the plan is to work towards the organic certification through regenerative agriculture. The farm is already Planet Proof certified, which is the highest possible certification in the EU regarding sustainable farming.

The Crew

Jeroen and Mellany Klompe have been front-runners in regenerative farming for more than 10 years. Besides being a farmer, Jeroen is an impact entrepreneur (Rechtstreeks, Pymwymic and Tomasu). Mellany has a background in environmental science. She previously worked for the Dutch Waterboards and different local governments agencies. She is connected with a broad national and international network of experts committed to move the meter on agricultural policy, sustainable farming, agricultural nature conservation and regenerative farming. She is also on the board of the Collective Cooperative for Hoeksche Waard (www.cchw.eu), a region in South Holland. In this role she has been a driver in creating more than 800km of field margins and biodiversity lanes on the island to promote natural pest control, pollination and biodiversity.

Their son Pieter (17 years old) works on a farm located near his university, as a part-time job next to his studies. When he comes home for the holidays, he gives a hand on his parents' farm. Their daughter Davine (14 years old) is still in high school but wants to be involved in the future of the farm. Jeroen's father gives a hand on the farm on a daily basis as well. Although he retired, he can't quite let go of it yet!



Operations

There are 3 permanent staff members on the farm, and in the harvest period more fixed-term workers (6 to 8 people) join the team.

The Klompe family grows 13 types of crops on their farm, including potatoes, onions, corn, brown beans, kidney beans, soybeans, several types of wheat, poppy seed, carrots, grass seed/rape seeds, oats, buckwheat, quinoa, sorghum, green beans and garden beans.

Plot Greup A (17,6 ha) and Plot Greup B (9,13 ha) are some of those that have been farmed regeneratively for the longest time (respectively 6 and 7 years).

Plot Greup A

On Plot Greup A, Klompe Landbouw is trialing (in 2021) a lane-farming technique. The crop rotation for this plot is: soybeans, 2 types of wheat, oats, biodiversity lanes (annuals flower strips), rice and probably a protein crop. The soybeans and wheat will be sold through direct distribution to Tomasu (soy sauce), Jack Beans, Rechtstreex, Boerschappen and buyers through the Soil Heroes Fair Chain System. Alongside this plot there are two perennial field margins.

Plot Greup B

On Plot Greup B, Klompe Landbouw will grow a conventional monocrop (potatoes). Alongside this field, there is a perennial field margin and steppingstone designed specifically for partridge habitat. All of the biodiversity lanes have been made possible thanks to a 1% for the Planet Grant from Patagonia, and thanks to buyers' contributions through the Soil Heroes System.

Regenerative practices

The Klompe Farm executes most of the 20 core principles of regenerative farming:

1 Shallow tillage/no till

Shallow tillage cuts through the soil no deeper than 10-12 cm; plus, there is no turnover of the soil. As a result, biological life in the soil is minimally disrupted: root and worm channels are maintained, and more CO2 remains captured underground. Meanwhile, in ploughing/regular tillage, the soil is worked as deep as 40 cm, and soil life is thrown upside down. On the Klompe Farm we use a cover crop cutter (designed to cut only the top of the plants and leave straws in place), a direct seeder and different types of cultivators. Before seeding potatoes and onions we use an eco-plough which does not work the soil deeper than 12 cm. Otherwise, the seeding machine becomes clogged with the remaining crop residues from the previous cover crops.

2 Cover crops

A cover crop, such as alfalfa is sown on an agricultural plot in order to fertilize the soil for the following crop (mainly through the intake of nitrogen). This cover crop is sown between the seasons of cash crops (usually between two highly demanding nitrogen crops) or in combination with the previous crop. Unlike a cash crop, a cover crop is not often grown to be sold. On the Klompe Farm we use a nitrogen-fixing cover crop mix during the years we grow potatoes and onions. We use a mix of 5 different types of seed. During the years we don't grow potatoes or onions, we use a seed mix that is more designed for soil biology and aboveground biodiversity (winter feeding insects, bees, bumble bees and birds), root development and root depth. When the plots were in their first years of regenerative transition, we chose a cover crop mix specifically designed for root development and root depth, in order to improve the soil structure. In our view, the higher the diversity of the cover crop seed mix the better.

3 Deep-rooting/resting crops

The use of deep-rooting (or resting) crops in a crop rotation plan allows the soil to recover and regenerate in between crops that are more demanding for the soil. Crops with deep rooting systems have a positive effect on soil structure and provide good soil cover. This is beneficial for water infiltration, water holding capacity and also for retaining nutrients in winter. On the Klompe Farm we use resting crops like cereals, buckwheat, poppy-seed, grass-seed, flax, quinoa, sorghum, rapeseed. On average each year we grow resting crops on 45-60% of our plots.

4 Mulching straws and crop residues

Leaving crop and straw residues on the fields will let soil microorganisms "digest" and incorporate these residues in the top layer of the soil. The incorporation of crop residues contributes to building organic matter in the soil. More organic matter means that more nutrients are available for the next harvest. On the Klompe Farm we get the most residues from harvesting cereals, seeds and cover crops. Usually, we let the residues on the soil for several weeks and then incorporate them into the soil (cutting 5-10cm deep) with a cultivator.

5 Crop rotation plan

The crop rotation plan refers to the organization of the different types of crops grown annually on a farm. Alternating between different types of crops is important to maintain good soil quality, improve soil structure, natural pest control and biodiversity. Crops like carrots, potatoes, onions are very draining for the soil while crops that have a late harvest date (like sugar beets) pose a greater risk of soil compaction and leave less time in the calendar for growing cover crops. Therefore, it is important to design a crop rotation plan including the highest crop diversity possible, so that the soil can recover. On the Klompe Farm we are committed to increasing crop diversity on the Klompe Farm. We grow different types of cereals and we also alternate between quinoa, sorghum and seed crops.

6 Leguminous crops

Leguminous plants have been used in agriculture for thousands of years. They fix nitrogen in the soil, which allows farmers to reduce the use of chemical fertilizers. On the Klompe Farm we grow different leguminous plants on the Klompe Farm including brown beans, soya beans, fresh green peas, chickpeas and garden beans.

7 Crop diversity

Crop diversity is the foundation for agriculture, enabling it to evolve and adapt to meet the challenge of food production. Intensive agriculture encourages the use of the same crops all over the world. Increasing crop diversity means encouraging farmers to select and grow the crops they need to suit their geographic area, soil type, diet, culture, market and socio-economic environment. Each plant has its specific properties – differences in rooting system, seasonality, nitrogen fixation and production of organic matter.

8 Use of lighter machinery

We use caterpillar tractors and low-pressure tires to prevent soil compaction. Soil compaction leads to poor water absorption and poor aeration, which can slow down root growth. Erosion can negate soil fertility and result in drought or flooding issues, hence the importance of a lighter touch to our soil.

Regenerative practices

9 Use of several types of biofertilizers and inoculants (made with good quality water)

On the Klompe Farm we are currently testing 10 different recipes for homemade biofertilizer. The goal is to determine which ones score best in terms of microelements and amino acids and which ones require the most efforts to brew.

10 Flower field margins and biodiversity lanes

Creating a field margin means leaving space between the crop and the adjacent habitat (usually a hedgerow) and planting flowers or grass-herbs instead. It contributes to natural pest regulation and increases pollination by bees, spiders, beetles, hoverflies, parasitic wasps and lacewings. Biodiversity lanes follow the same principle, but they are located between two fields or within a field. On the Klompe Farm we have implemented field margins and biodiversity lanes for more than 20 years. As a result, we don't have to use any insecticides anymore.

11 Rugged vegetation/ landscape elements

The Klompe Farm has changed mowing management over corners, parcel edges and slopes. Steppingstones are large surfaces of land (> 0.5 ha) decorated with woody landscape elements (bushes, bushes and solitary tree stands) which have a positive impact on natural pest regulation and natural pollination by bees. On the Klompe Farm, our steppingstones are specifically designed to serve as a habitat for partridges, which is an endangered species.

12 No bare soil

On the Klompe Farm our soil remains covered at all times, especially with cover crops that will prevent erosion. This preserves the 'sponge effect' of the soil and increases its resilience to extreme weather events like floods or droughts. The rooting system of the crops will hold the soil particles together for longer. Without cover crops and their rooting system, external disturbances like rainfall, irrigation or melted snow will separate soil particles from one another.

13 Geographic optimization

This includes precision cultivation and fixed train paths. It requires the use of technologies like GPS and soil sensors. We use both techniques on the Klompe Farm.

14 Use of solid manure as green compost

Fertilizing components directly or indirectly produced by living organisms (manure or compost) will supply organic matter to the soil in a natural way and boost crop development and soil fertility. This is important for a stable soil structure, a healthy and active soil life that ensures the release of nutrients and good permeability to water and air. At the Klompe Farm, we have a partner cattle breeder from which we annually receive solid cattle manure that we use as natural fertilizer, and as basis to brew our own biofertilizer. We actually use a mix of solid manure and compost. We mix it up with our biofertilizer and rock dust (minerals) and apply it on the fields after we harvest the resting crops.

15 Reducing the use of artificial fertilizer and nitrogen (N)

The use of artificial fertilizers and especially nitrogen (N) should be kept to a minimum. Artificial N is a very salty substance that causes a great imbalance in the mutual cooperation of minerals and creates a "dependency" in crops (they won't be able to fix nitrogen by themselves anymore). On the Klompe Farm we do our best to reduce the use of artificial fertilizers, replacing them with natural alternatives. We grow nitrogen-fixing cash crops and cover crops, and we apply our own biofertilizer.

16 Strip cultivation/lane farming (6 species)

On the Klompe Farm we started experimenting strip cultivation in 2021, with 6 strips and 6 different species (one for each strip) on one plot. This makes the agricultural system more resilient to diseases, pests and external weather conditions. The more diverse the plantings, the stronger the agricultural system.

Who we are

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