

WELCOME

As the ecologist Robin Wall Kimmerer once said, "diversity creates resilience. In nature, as in life, the more varied and interconnected the system, the stronger it becomes."

Looking back over 2024 – a year defined by prolonged and new conflicts, and growing pressures of climate change, the need to create a stronger food system seems more crucial than ever. For this to happen, diversity, a core principle of regenerative agriculture, must be given centre space.

Food, whilst fundamental to our existence, has also been the foundation of great joy, as long as we have lived. The diversity of our food cultures have reflected our environments, our native plants, our festive traditions, and paid homage to the artisan skills of farmers and producers through centuries. But as the food system has become more globalised, it has become commoditised and thus homogenised in the name of efficiency. Today it is said that 75% of the world's food is generated from only 12 plants and five animal species, and just three plants – wheat, rice and corn – account for 60% of our calories!

With the loss of diversity in our food system, we have lost the diversity in our diets, in our gut microbiomes and, agricultural systems. Farms now have to concentrate on growing large areas of monocrops, with little space for nature and a focus on plants for yield and uniformity over taste and nutritional value. It is not news to any us of that our current food system is the basis of ill health, of contributing to climate change, damaging our environment, and undermining our very ability to produce enough food in the future. The reaction to the growing body of evidence that shows the impact that our food system is having, has been to demonise the farmer, and push them to change their way of producing, without simultaneously tackling food processing, retail and consumption. But farming does not exist in isolation; it is shaped by the entire food system. To change how we farm, we must also change how we eat, trade, and value food.

Improving diversity at the farm level – through extended crop rotations, multispecies cover crops, wild flower strips, intercropping and so on – it a core principle of regenerative agriculture. By choosing food from regenerative farms means supporting agrobiodiversity and thus, supporting a stronger and more resilient food system. It often feels that change on the ground in this regard is painfully slow, and current political dialogue is now more often about reversing hard fought for environmental legislation, as opposed to advancing it. But change is happening. What was once a bunch of unconnected brave individuals, trying to push barriers to find a better way to farm and source regenerative food, has now become a movement, a regenerative movement with momentum. From farms of all types and sizes, NGOs, enlightened food companies, authors film makers, impact investors, academics, farm advisors and committed individuals, the Soil Heroes Foundation is part of wonderful, committed, brave, and diverse tribe, who are coming together to change the food system.

Like the growing mycelium networks in our healthy soils, it may not be yet so visible, but the connections are building. History has shown that diverse grass root movements have stronger foundations to grow from. And in 2025 we look forward to this tribe growing even stronger and more diverse so that the movement from regenerative agriculture comes from every part of our society, and when all our actions when put together create an unstoppable momentum to regenerate our food system for a healthy planet and healthy people.

Annabelle Williams | Executive Director

The Soil Heroes Foundation

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GOVERNANCE

Stichting Soil Heroes Foundation is a non-profit foundation, solely focused on serving the common good of the transition to regenerative agriculture.

MISSION STATEMENT:

Our mission: To enable the long-term viability of people in harmony with the planet.

Our goal: To stimulate and establish a regenerative society where the restoration of soil health, soil biodiversity and the production of food with a higher nutrient density is central.

Overall objective: To catalyse the transition to regenerative agriculture globally.

Our approach: To support and stimulate regenerative initiatives globally and initiate and innovate ourselves.

EVENTUALLY LEADING TO: Restored soil health, biodiversity, water and air quality, new and fair business models for farmers, improved nutrient quality of our food and a more stable climate and healthy planet.

BOARD



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Mellany Klompe - Founder & Voluntary Consultant On Regenerative Agriculture

Mellany is a co-founder of the Soil Heroes Foundation. She has a background in environmental science and previously worked for the Dutch Waterboard as well as a number of local government agencies. She is also on the Board of the Collective Cooperative for Hoeksche Waard. In this role she has been a driver in creating more than 800km of field margins and biodiversity lanes on the island of Hoeksche Waard to promote natural pest control, pollination, and biodiversity.

Jeroen Klompe -Founder & Director Of The Experience Farm

Convinced, through experience, that nature holds the answers, Jeroen, along with his wife Mellany, has built up and transformed their family farm, Klompe Landbouw. Situated just south of Rotterdam in The Hoeksche Waard, it is now a highly successful arable regenerative farm with a combination of sustainable, cutting-edge technology and natural solutions. Jeroen studied farm management at Delft and real estate management in Utrecht. Jeroen is passionate about food quality and taste and is one of the role model regenerative farmers of the Netherlands who strives to "make soil better".

Annabelle Williams - Executive Director

Having grown up on a working farm in the UK, Annabelle has never swayed far from her agricultural roots for long. After a decade working for humanitarian organisations in conflict regions, she moved back to the world of agriculture, spending over 10 years working for, and managing, sustainable agriculture think tanks, advocating to transition our farming systems to models that are sustainable for the climate, for the environment, and for the farmers. During a deep dive project on soil in her last position, she was particularly struck by the innovative, ground up proof of practice approach taken by the Soil Heroes Foundation, and joined the team in September 2022. Annabelle holds an MBA in Food and Agriculture Businesses.

OUR MISSION

WHY ARE WE STRIVING TO SUPPORT A SHIFT TO A REGENERATIVE AGRICULTURE SYSTEM?

LIFE ON EARTH IS ENTIRELY DEPENDENT ON HEALTHY FUNCTIONING SOILS.

THE SOLUTION: **REGENERATIVE AGRICULTURE**

They are the very foundation of the ecosystems upon which we rely, and we count on their functioning to produce our food, cycle our nutrients, sequester carbon, manage waterflows, and be the bedrock of the planet's biodiversity. They have a crucial role to play in climate mitigation and resilience and determine our future food security.

And yet it is estimated **that 60 to 70% of all soils in the EU alone are in an unhealthy state**, leading many scientists to equate the worsening state of soils with the same level of concern as the climate crisis.

Regenerative agriculture is a set of farming practices that works with nature, rather than against it, putting soil health and function at its heart.

CORE PRACTICES INCLUDE:

- Reducing soil disturbance
- Eliminating synthetic inputs
- Increasing crop diversity (through extended rotations and in crop diversity)
- Expanding crop rotation

- Implementing landscape elements such as flower field margins
- Keeping the soil covered all year long by growing cover crops in-between cash crops
- · Integrating grazing animals

These practices, among other benefits, rebuild soil organic matter and restore biodiversity. This in turn results in reduced or a complete reversal of soil erosion, improved aggregate stability, water infiltration, water retention, nutrient cycling, plant health, crop yields, crop resilience, above and below ground biodiversity and crop nutrient quality. These are all effects that we are seeing on our own test farm as we trial and collect data on these methods. But regenerative agriculture goes far beyond the farm gate, sequestering carbon and reducing GHG emissions thereby making an important contribution to our efforts to slow climate heating, providing clean water, and creating resilience in our food system.

These are all benefits that are crucial to society and our quality of life on this earth, but also provide a win-win for farmers, providing the opportunity to strengthen their farm's resilience to the growing climate change effects: stabilising yields, reducing crop losses and reducing input costs for pesticides, fertilisers and irrigation. Most of the practices applied in regenerative agriculture are not new, indeed they have been practiced for 1000s of years. The difference now is that we know why they work and how they work. The greatest challenge for today's farmers is to learn how to integrate the ancient concepts of regenerative agriculture and translate them into modern farms whilst building new sustainable regenerative business models.

At the Soil Heroes Foundation, we are working with the Klompe Farm to trial regenerative agriculture on a large-scale commercial farm. We are testing the integration of regenerative farming practices to see what works, and what doesn't work, and to find real time farming solutions to overcome the challenges that the application of new regenerative farming practices might present to a modern commercial farm. This creates a visual, and data driven evidence of what other farmers can do and shows politicians and food producers the potential for a new horizon for farming.

WHAT IS REGENERATIVE AGRICULTURE?



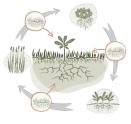
Expanding crop rotation



Use your own seed mix



Increasing crop diversity



Select deep rooting crops



Increase crop diversity



Plant winter covers



Plant perennial crops



Geographic optimisation



Use lighter tools



Incorportate straws and crop residues



Employ shallow tillage or no till



Phase out artificial fertiliser, especially nitrogen (N)



Use cover crops as green manure (natural fertiliser)



Integrate grazing animals



Use biofertilisers



Use solid manure/green compost



Mix crops (2 crops)



Install cultivation strips and agroforestry (>crops)



Implement field margins and biodiversity lanes



Install rugged vegetation stepping stones

WE EMPOWER FARMERS TO BUILD THE HEALTH OF THEIR SOILS BY:



- Providing Proof of Practice
 Farmers need to see that it works
- 2 Sharing Knowledge & Tools
 Farmers need to know what to do
- Building Community

 Farmers need to feel part of a bigger whole



OUR EXPERIENCE FARM

All our regenerative agriculture trials are carried out on Klompe Landbouw. Klompe Landbouw is a third-generation Dutch family farm located on the island of Hoeksche Waard, 20km south of Rotterdam. Of its 300 hectares, 200 ha are now farmed regeneratively, which makes the Klompe Farm one of the largest experiments for regenerative farming in Europe. The progress of transitioning the remaining hectares will provide an excellent learning opportunity for the Foundation, and for farmers, to see the transition in real time. It is also the first farm in the BeneLux region to have achieved BCorp certification!

The farm is owned and run by Jeroen and Mellany Klompe who have been front-runner regenerative farmers for more than 10 years. In partnership with the Soil Heroes Foundation, the Klompe Farm trials, and then implements a wide range of experimental regenerative practices, including biofertilisers, compost tea, lane farming, biodiversity margins and strips, no till etc. With part of the farm still being run conventionally, it provides an ideal example for us to test and compare the effects of regenerative versus conventional farming on biodiversity, nutrition, water holding capacity and so on.



Mellany Klompe testing leaf sap in the farm lab.

We work with universities and research organisations to monitor the trials on the farm and generate data on the effects of the practices. These results are complemented by the farm's own farm logs – recording the adaptation of the farming practices, the yields, the effects of the weather on the different plots, observations on plant health, machinery adaptation etc. as well as testing in the on farm lab. Currently the farm grows a wide range of crops including potatoes, onions, brown beans, kidney beans, soybeans, several types of wheat, carrots, naked oats and buckwheat, as well as trialling new regenerative crops, such as land rice.

Carrying out these trials on a commercial farm enables the Foundation to bridge the divide between academic research and a farmers' daily reality, thus shortening the jump from research to practice. It allows us to combine scientific results with solutions for daily farm management challenges and to understand the economic feasibility of such an approach. This is crucial for farmers. In order to facilitate the transition to regenerative farming practices, farmers need to see regenerative agriculture in practice – the machinery used, the man hours, the soil data, the resulting yields, and the market pathways for the products. Thus this approach creates a more relatable and thereby influential demonstration model for other farmers, for buyers, for food processors, and for policy makers.

PROJECT: NUTRIENT DENSITY IN FOOD

The Soil Heroes Foundation has embarked on a study into the impact that regenerative farming practices can have on soil health, and thus, the nutritional density (variety and quantity) of the food crops produced on those soils. Over three years, the Foundation is running 33 trial plots on the farm comparing conventional plots with those which have a variety of regenerative practices applied to them. The soils, sap and final crop will be tested and compared each year.

Since the 1940s groups of scientists, consumers, and farmers have questioned whether the nutritional density of the food we eat has been declining over time. Studies have been carried out sporadically during this time frame, but the different variables and testing methods in the studies has made it hard to make comparisons. However, recent reviews of these studies have indicated that there are potentially differences in the nutritional profile of the same crop produced on regenerative versus conventional fields.

Two major advances in science make it particularly interesting to come back to this question today. First, there have been significant advances in understanding soil biodiversity and we now have a much greater (although still far from complete) understanding of how soil biodiversity can have a direct effect on the nutrients that plants can access and utilise. Second, laboratories can today analyse a far greater range of amino acids, vitamins, minerals etc. in our food.

If there is evidence to show this correlation, the implications for our health and the support for regenerative agriculture could be far reaching.



PROOF OF PRACTICE

2024 was our first full official year of testing on the nutritional density project. After running trials on single repetition test plots in 2023, we integrated the learning into the methodology design for 2025.

The year started with the Louis Bolk team carrying out the soil testing on the test plots – taking soil samples to test for nutrients, looking at water infiltration, examining soils profiles, testing levels of soil compaction and bulk density as well as examining fungal:bacterial rations, degradable organic matter levels and microbial activity and biomass.

In the spring we prepared the seed beds for the sowing of the soy beans – the 2024 test crop. There are enormous benefits to running a trial on a working commercial farm as we are here. The main advantage being that it bridges the gap between academic research and on farm application as we are trialling on open soils using agricultural machinery, and thus, if farmers want to replicate the results of this project, they can apply the same processes. The disadvantage however is that the test plots are subject to the same uncontrollable environmental conditions as



The Louis Bolk team carrying out soil testing.

any farm, and 2024 brought them in force. A series of germination issues (cold wet late spring), combined with an decrease in the number of pests (pigeons and rabbits) led to three failed sowings of the soya bean test crop. Rather than risk another failed soy crop later in the growing season, we pivoted to turnips.

Happily the turnips germinated and grew successfully. The test plot applications were applied to the regenerative fields (biofertilizer, mulch, compost tea, companion planting) and the conventional fields (synthetic fertilisers). At the half way point we collected the leaves for sap testing, took soil temperatures and measured the soil microbial biomass and fungi-to-bacteria ratio with the microbiometer. Finally, when the turnips were ready to harvest we took yield measurements and sent them out to the lab to test the nutritional profile (vitamins, amino acids, total proteins and carbohydrates and a wide range of minerals).



The Klompe family preparing soil samples.

This year we are delighted to also be working with Wageningen University with the support of the Rockefeller Foundation to test for plant secondary metabolites (saponins, phenolic compounds etc). Early research shows that metabolites such a phenolic compounds and saponins may have an important role for human health, and that they maybe found in higher concentrations in regeneratively produced food. These tests will also give us and indication vis a vis the plant resilience to stress in different agricultural systems (regenerative v conventional).

In the autumn, after the harvest, the cover crops were sown and all the data of the soils, saps and crop collated for analysis, the results of which will be ready in early 2025.

PROJECT: BIODIVERSITY

Agroecosystems provide an important habitat for a wide range of species, yet the intensification of agriculture, including the loss of natural landscape elements and the use of synthetic pesticides and fertilisers, is one of the main causes of the increasingly documented decline in biodiversity in agricultural areas and beyond. Whilst this is devastating for the survival of many important species, it is also damaging for farming.

Agriculture depends on the ecosystem services provided by species in the system, such as pollination, natural pest control, the suppression of diseases or weeds or facilitating the nutrient cycle and water balance. Relying on the services provided by functional biodiversity is an essential component of regenerative agriculture and therefore if regenerative agriculture is going to be effective, a farmer must apply practices that improve it.

Regenerative agriculture includes a toolbox of practices which have the potential to not only reverse the decline in our biodiversity, but to actively build it. Biodiversity and regenerative agriculture are a perfect example of how working with rather than against nature can bring multiple benefits.



PROOF OF PRACTICE

In 2024 we partnered with **Sumthing** to fundraise to support biodiversity strips on farmland. With the generous support of donors – both individuals and companies, we managed to implement over 29,060m2 of biodiversity strips on the Klompe Farm in the Netherlands. The biodiversity strips were planted with a mix of 19 plants, specially selected to provide a wide range of insects and birds with food throughout the season, into winter.

Careful monitoring of the biodiversity on these strips throughout the season showed an enormous variety of birds and insects. Monitoring was done by the Nature Conservation organisation, the **Hoekschewaards Landschap**. A 50-meter-long transect was established along each flowers border, and observations were made over a 20-30 minute period. Insects observed within a 1-meter width were recorded on a monitoring form, noting species within specific target groups such as bees, hoverflies, other natural enemies, dragonflies, and butterflies. This was carried out on 5 separate dates. The methodology was based on a previously successful project called **FABulous Farmers**. Moths and butterflies were monitored using the BIMAG method.

AN INDICATION OF THE BIODIVERSITY BENEFITING FROM THESE BIODIVERSITY STRIPS:

Bees: the honey bee, bumble bee, a range of common large bees (hommel algemeen) and small bees (Kleine Bijen)

Flies: Large Bee Flies, Small Bee Flies, Pendulous Flies, Menuet Hoverfly, Band Hoverflies, Comma Hoverflies, Whiskered Hoverfly, Long-bodied Flies, Triangle Hoverflies & Flatfeet, Halfmoon Hoverflies, Water Hoverfly, Small Marsh Soldier Fly, Meadow Fly

Natural predators: Green Lacewings, Brown Lacewings, Flower Bugs, Large Parasitoid Wasps, Small Parasitoid Wasps, Seven-spotted Ladybird, Asian Ladybird, Red-black Soldier Fly

Butterflies and moths: Brown Argus, Peacock Butterfly, Small Tortoiseshell, Red Admiral, Hay Butterfly, Painted Lady, Icarus Blue, Map Butterfly, Gamma Moth, Grass Moth

Birds: Pheasant, Yellow Wagtail, Linnet, Skylark, Whitethroat, Meadow Pipit, Greenfinch, House Sparrow, Goldfinch, Stock Dove







Left European Goldfinch

Cantharis

Hoverfly

PROJECT: COMPOSTING

Is there a business case for making large quantities of on farm compost for regenerative farmers?

Compost is a much written about, much debated subject, often talked about in revered terms. And rightfully so. It is the stuff the magic. If done well, composting can turn plant material into a rich soil that is full of nutrients, organic matter and microbial life – medicine for improving soil health.

However, accessing good quality affordable compost was also seen by some regenerative farmers – specifically those managing large hectarage, such as arable farmers, as a major cost barrier to enter regenerative farming. To give an idea of the costs involved – in the Netherlands 'quality' compost costs in 2024 were €22 to €23 per m^3 (when bought at volume). A farm of around 200ha would need about 1300 tonnes for direct application – a cost of a staggering €40,000 per annum.

So, we thought, could a way around this be to build a business case whereby regenerative farmers could use inputs from their farm, such as mown cover crops and straw, to make their own compost, and create a circular nutrient and carbon cycle on the farm? So, with the support of Patagonia and WWF, we set off upon a journey of discovery, talking to some amazing composting experts across Europe.



PROOF OF PRACTICE

And whilst we collected a wealth of information on the trials and tribulations of composting, we very quickly realised that regulatory restrictions, particularly in the Netherlands, but also in many Member States throughout Europe, made the production of the amount of solid compost required for a medium size arable farm completely unviable.

The business case idea had to be dropped, but the project was not without significant benefits. We also learnt that the growing of multispecies cover crops (a mainstay in regenerative agriculture), and their composting on field was an important alternative; that regulations would allow for the much smaller production of on farm compost required for compost tea. And that whilst there is no doubt that the application of solid compost across the farm was a major accelerator in regenerating soils, once regenerated, the combination of practices that we apply in regenerative agriculture was sufficient to maintain soil health and organic matter (no till, cover crops, diverse rotations, leaving in roots and crop residues, biodiversity and variety etc.).

Another practice that can support this is reintegrating livestock back into the arable systems. Integrating livestock to recycle organic matter on the farm and improve soil health has been well documented. But livestock restrictions, and cost/risk implications for the farmer do not always allow for this.

We won't be forgetting our on farm composting idea. As society gradually gets behind the necessity of the circular food economy, no doubt regulations will change and adapt. But for now this project has given us a lot to get on with, namely:

- Developing new compost recipes for compost tea and testing their impact on the soil biology
- Looking into methods to increase the surface areas of mown cover crops for more rapid composting on field
- And finding ways to more effectively sow seeds directly through the mown cover crops on the field

SHARING KNOWLEDGE

It is crucial that what we learn on the farm doesn't stay on the farm.

The motivation behind our proof of practice projects is to share with farmers what is possible – what worked, what didn't work, and the benefits of farming regeneratively.

Farm tours

Farm tours are central to our knowledge sharing work and give a wide range of stakeholders the opportunity to see regenerative farming in action. The tours allow farmers to walk around and ask the practical questions on the spot, either as regenerative farmers already on the journey for transition, or as a conventional farmer looking to change. They are able to see the plot trials, see the lane farming, feel the soil, observe the differences in the crops and watch the biofertiliser fermenting. But it is equally important to show sceptical politicians and food companies that regenerative farming is possible at scale, and should be supported.

In 2024, we showed 430 visitors around the farm.

Policy work

The farmers cannot do this alone, and need to be supported by an enabling policy framework. Using what we learn through our trials on Klompe Farm, we inform policy makers of the barriers that regenerative farmers face in our current policy climate.

The Soil Heroes Foundation team is regularly called upon to give interviews with those creating policy briefs, show policy makers around the farm, speak at policy events, and is a member of the following groups:

- European Agriculture Sustainable Dialogue Group
- The Think Tank for the Soils for Europe project, SOLO (2023-2027)

Webinars, podcasts and speaking events

In 2024, members of the Foundation were invited to speak in webinars, gave interviews for a series of articles, and invited film crews to the Klompe Farm to talk about what we do. We use these opportunities to explain what we are doing and why, and what we have learnt. This is a fundamental part of changing the system.

- Follow up prototype video with the team behind the film 'six inches of soil'
- Food Stories
 - https://resiliencefoodstories.com/story/regenerative-agriculture-in-the-netherlands-making-soil-better-every-day-by-mellany-klompe/
- Interview in the Jack Delors Institute series on regenerative agriculture
 https://www.europejacquesdelors.eu/news/regenerative-agriculture-has-to-become-mainstream
- Interview in Nature Based Solutions Policy Screening and Analysis of Needs and Gaps for 2024-2030

https://networknature.eu/product/31829

Newsletters and social media

Every month we send out updates on the work of the Foundation, and trials on the farm through our newsletter, and through our social media which now has a combined following of over 14,000.



We were again, very active in being involved in discussions, networks, and making contact with wide range of people – both active in the regenerative agriculture 'community' and outside it.

We showed farmers around the farm, joined meetings on European policy, briefed investors, shared data on the benefits of the regenerative agriculture with companies in the food sector, visited other farms, exchanged ideas and shared what we have learnt through videos, articles and social media.

THE JOURNEY AHEAD

Since the Foundation's inception in 2019, we have learnt an enormous amount about regenerative farming – trialling cover crops, compost tea, biofertilizer, row cropping, manual weeding and trying out new crops. The list goes on. We've been sharing this with farmers, investors, policy makers and food companies along the way. But we know there are so many that cannot reach the trial farm in the Netherlands, and so in 2025 we will be working to get what we learn out to more people than ever in the hope we can inspire more farmers and decisions makers to take on the mantle of regenerative agriculture.

One we way will be doing this will be to take a much deeper dive into our Farmers guidebook, giving more detail to each of the practices based on what we've had learnt and instructions on how we did it. We'll be sharing the scientific data we've collated that backs up the practices, and make it more interactive with video links and infographics.

We are also looking at ways to expand out from the Klompe Farm in the Netherlands. Whilst we will keep working with Klompe Farm and running trials with the keystone farm of the Foundation, we will also seek other farms in Europe who are willing to share their knowledge and work with us to trial practices to address the challenges they are facing as regenerative farmers, so we can share it with others dealing with the same issues, and show both through practical farming realities, and scientific data, the benefits of regenerative agriculture.

2025 will also mark the second official year of our nutrient density testing and we will continue to test the soils, saps and crops from the 33 test plots.

We will incorporate specially designed biodiversity strips on the test farm to provide habitat and food for a wide range of insects and birds.

And finally, working with Klompe Farm, and other farmers in our network, we will be closely following the challenges that they, as regenerative farmers, are facing, especially in light of our changing climate, and ensuring that the work at the Foundation remains relevant to the needs of farmers everywhere wherever they are on the journey to transition to regenerative agriculture.

OUR PARTNERS

We couldn't achieve all that we do at the Foundation without the exceptional support of our partners who share our motivation for a regenerative future.

If you too would like to support us, please contact annabelle@soilheroesfoundation.com or donate directly through our donation page: https://www.soilheroesfoundation.com/donate/

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