



Food forests are hip

“What are the effects of a food forest?”

Food forests are being developed all across the Netherlands. These newly planted forests produce foods, such as berries and nuts, while simultaneously helping the soil recover and restoring biodiversity. While the practical experience gained so far is very promising, little scientific research into the real impact of food forests has been carried out. However, this is about to change.

In recent years, food forests have attracted a lot of attention – and justifiably so, says researcher Jeroen Kruit from Wageningen Environmental Research. He believes that food forests can make an important contribution to supplying an effective solution to major problems in agriculture, from climate change to the nitrogen problem, restoring biodiversity, water capture and circular agriculture.

In the Wetenschappelijke Bodemvorming onder de Voedselbosbouw (A Scientific Foundation for Food Forests) project, financed by the Agri & Food and Horticulture & Plant Propagation Materials Top Sectors, the impact of food forests will be investigated over a period of four years: what are the effects of food forests?

Sustainability

Jeroen Kruit is the project leader of this new study. He first learned about food forests in 2016 as a participant in the group that initiated the realisation of a Green Deal for Food Forests. At that time, governments, policy makers, research and education institutes, pioneers and other parties agreed to work to expand the total area of food forests in the Netherlands.

The principle behind a food forest is simple: it is a forest ecosystem, planted by humans, which produces food. A successful food forest takes care of fighting pests itself, accumulates fertility, is resistant to climate change and produces food for human consumption. The forest ecosystem is self-sustaining, i.e. it operates without the need for fertiliser, pesticides, irrigation or drainage. These forests are highly biodiverse and contribute to restoring soil fertility. Kruit: “The practical experience gained with food forests is very positive. However, we are now initiating fundamental research into food forests for the first time. In this study, we will test whether a well-designed food forest can contribute to effectively tackling the sustainability challenges we face.”

Carbon storage

Within this project, two food forests that are being developed by the Stichting Voedselbosbouw Nederland (Dutch Food Forest Foundation) will be used: in Almere (30 hectares) and Schijndel (20 hectares). These two food forests will be “living labs” for the practical research. In this project, Isabelle van der Zanden, a PhD Student at the Nederlands Instituut voor Ecologie (Netherlands Institute of Ecology, NIOO-KNAW), is researching the impact of food forests on the climate and soil biodiversity. “Here and at several other locations, I will study the soil life under food forests, and most of all accumulate knowledge about the nutrient cycle and carbon storage.”

“Can food forests retain more water and improve soil quality?”

The research project started only four months ago. Late last year, the first samples were taken from the soil in the food forest in Almere. In Schijndel, samples were already taken for a baseline measurement in 2018. “In the analysis of the soil samples from the forest, we will primarily focus on carbon storage in the soil and the role of the soil life in that process”, explains Isabelle van der Zanden. The monitoring data from the field study will be compared with conventional observations used in the Bodemindicatoren voor Landbouwgronden in Nederland (Soil Indicators for Agricultural Land in the Netherlands, BLN).

Cultivation systems

Gerard Korthals, a research co-ordinator at the Centre for Soil Ecology at Wageningen University and NIOO-KNAW: “For example, data from BLN maize fields can serve as a reference. That way, we can compare our own observations with the available data from existing cultivation systems. By combining this data, you can see how the soil in a food forest develops compared to the previous period. By doing so, we expect to be able to see whether this deviates from an intensively cultivated field, for example.” Van der Zanden: “Compared to intensive agricultural systems, food forests offer promising perspectives for biodiversity, as the soil is not disturbed every year and natural succession is used.”

Water management

De Dommel water authority is one of the project partners. Ineke Barten is an ecologist at the water authority. She hopes the study will provide more insights into how the nutrient and water cycles function in a well-managed agricultural system. “We hope to find out whether food forests can retain more water, improve the soil quality and reduce leaching. We are also curious about the influence these trees and bushes have on the soil life. It would be great if the study produces a number of indicators that will allow us to quantify how much water food forests can retain throughout the seasons, for example.”

Labour

Kruit hopes that the business community will also join in the research. “At present, food forests are mostly run by pioneers. However, farmers are increasingly approaching us. They want to know what the revenue model is, but this is still problematic. You can reduce costs because heavy machinery, pesticides and other inputs are unnecessary. However, it takes around ten years before you achieve optimal production. Another important point is labour: at present, harvesting is often done by volunteers. If we want to roll out food forests on a larger scale, we need to find an answer to this.”

The Wetenschappelijke Bodemvorming onder de Voedselbosbouw (A Scientific Foundation for Food Forests) project is implemented by Wageningen University & Research, the Stichting Voedselbosbouw Nederland (Dutch Food Forest Foundation), the Centrum voor Bodemecologie (Soil Ecology Centre), the Nederlands Instituut voor Ecologie (Netherlands Institute of Ecology), the Province of Flevoland, Aeres University of Applied Sciences, HAS Den Bosch, the Groen Ontwikkelfonds Brabant (Brabant Green Development Fund), the North-East Brabant Region and De Dommel and Aa en Maas water