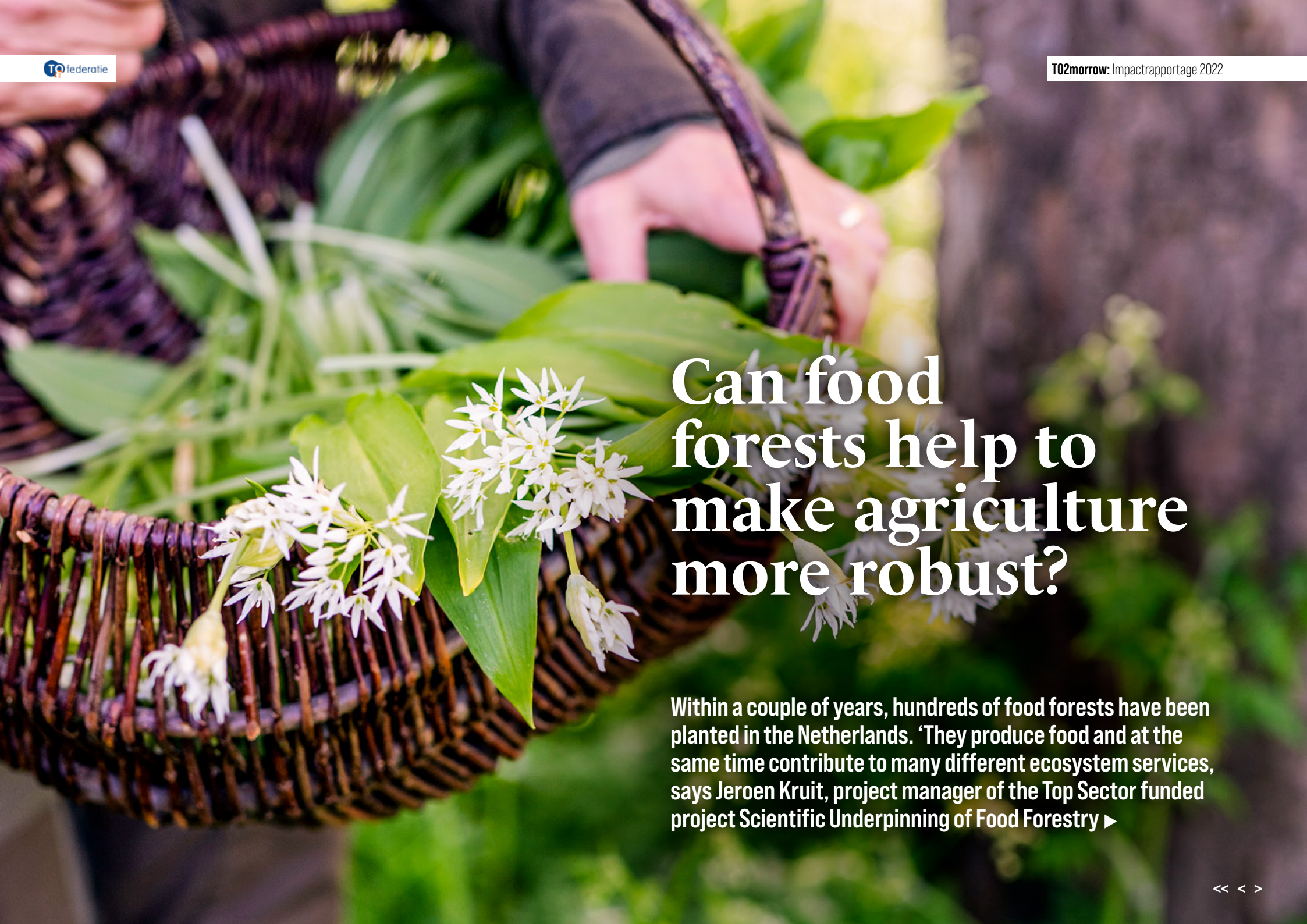

Can food forests help to make agriculture more robust?

Within a couple of years, hundreds of food forests have been planted in the Netherlands. ‘They produce food and at the same time contribute to many different ecosystem services, says Jeroen Kruit, project manager of the Top Sector funded project Scientific Underpinning of Food Forestry ▶

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Problem: how to improve the robustness of agriculture for weather extremes caused by climate change with more diversity and less monoculture?

T02 solution: the research project Scientific Underpinning of Food Forestry studies to what extent food forests can contribute to sustainable agriculture.

Impact: a more sustainable, environmentally-friendly and climate-friendly agricultural system.

But, to what extent do food forests contribute to major agricultural issues, such as climate change, the nitrogen problem, biodiversity restauration, as well as water retention and buffering? And is there a revenue model for the farmer? Kruit and his colleagues are seeking answers to these questions in their research project.

Annuals vs perennials

The government is convinced of the advantages: the ambition is to have realized 25,000 hectares of agroforestry of which a 1,000 hectares of food forests in the Netherlands by 2030. Farmers mostly grow annual crops. Agroforestry combines annual crops with perennials, for example, by planting rows of trees between fields of grain. Kruit: 'Those trees have positive effects on the annual crops because they provide shade and root deeper. That helps with the provision of water in droughts and drainage in events of heavy rainfall. Food forestry goes a step further. These multi-layered perennial systems mimic a forest ecosystem, growing many different species that produce edible fruits, nuts, leaves, roots, herbs and seeds. -

Food forests are a new phenomenon in the Netherlands: the best known food forest Ketelbroek was only planted in 2009. Meanwhile, hundreds of small initiatives, initiated by enthusiasts, have started. Slowly on also lager scale commercial food forest of 5 hectares and more are starting off.

Challenging alternative for farmers

Kruit thinks the government's aim is ambitious but promising, because it is linked to the objective of planting more forests in the Netherlands anyway. 'To meet the ambitions through planting trees on arable land farmers will have to be seduced to integrate trees in their agricultural system.' In a food forest, the most complex agroforestry system, the earning model is possibly most challenging, the researcher explains: 'Return on investments will take (a lot) more time compared to annual crop agricultural systems. Although a food forest will in time produce in abundance it will approximately take up to 7 years before a food forest starts producing serious volumes. At the same time there is no need for crop protection products and (chemical) fertilizer and no seasonal preparing the soil with heavy machinery for ploughing and sowing.'

Harvesting methods researched

What's more, harvesting in food forests is done by hand and often with volunteers. The food forests in Almere and Schijndel were developed with a research ambition in mind. The planting scheme was designed as such that future machine harvesting is possible. Developing these machines is one of the fields of research right now.

Kruit emphasizes: 'Although food forests will not provide us with potatoes and grain, they have a potentially important role to play in making the overall agricultural system more robust. This project teaches us to what level food forests can contribute to food production, biodiversity, climate mitigation (carbon sequestration) and climate adaptation (adapting to the effects of climate change).' ■

Who: Wageningen Environmental Research, in cooperation with a large number of partners.

Duration: 2020–2025.

Budget: €1 million.

Follow-up: additional research is necessary to make well-founded statements. More time is needed because a forest does not grow very fast.