

Closing cycles together

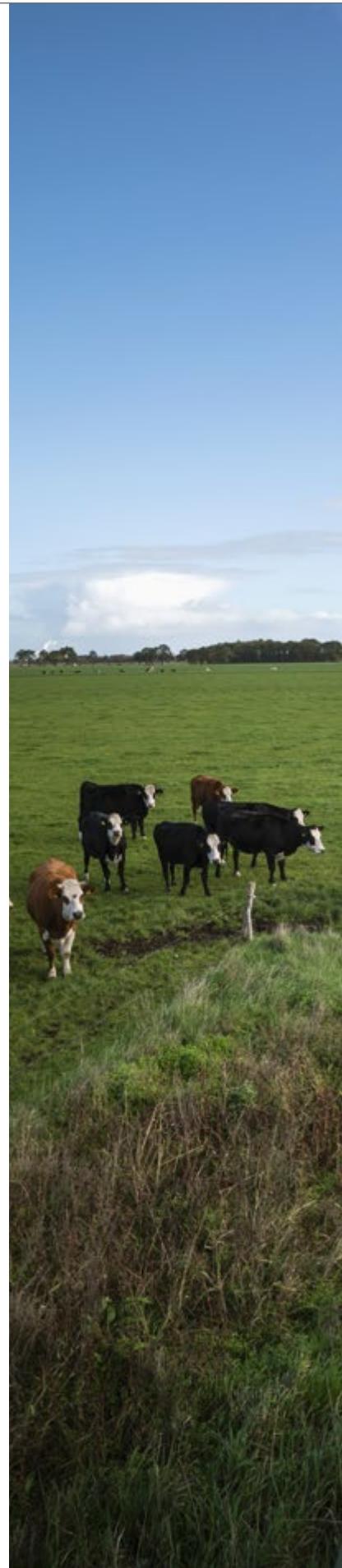
The Dutch ministry of Agriculture, Nature and Food Quality does not have a blueprint for the circular agriculture it is aiming at. The idea is that the approach will be developed in a patchwork of initiatives in which farmers, conservationists and scientists work together. The first of these are taking shape.

TEXT ALBERT SIKKEMA PHOTOGRAPHY REYER BOXEM

Maurits Tepper, joint owner with his wife Jessica of Eytemaheert farm, is busy building a 'skybox' in honour of the big shots from WUR and the ministry of Agriculture who will be visiting the farm tomorrow. They'll be able to survey his Groningen Blaarkop cows from the raised platform in the shed. They are coming to discuss a research programme at this brand-new experimental farm of Wageningen University & Research's.

We are in Leutingewold, at the northernmost tip of the province of Drenthe. Eytemaheert borders the Onlanden, a Natura 2000 reserve. It's a vulnerable area in terms of nitrogen, but Tepper is keeping his cool. His farm is to be a showcase example of a livestock farm with a closed manure and nitrogen cycle. Eytemaheert has 500 Groningen Blaarkop cows for meat production. The meat is sold

directly to consumers through a webshop. The cows are entirely grass-fed and the farm buys no feed or manure from elsewhere. But it does process grass clippings from the nearby nature reserve into the fertilizer bokashi. 'The nitrogen-rich clippings from the nature reserve compensate for the nutrient loss from the farmland due to grazing cows,' says Tepper. He would like further research done on bokashi, a mixture of grass clippings, chalk, clay and micro-organisms that break down the cell structure of the hay. 'Together with Staatsbosbeheer (the state nature service) and Natuurmonumenten (a nature conservation organization), we want to look at how other farmers could make use of this bokashi too. That is not possible at present because if you transport it more than five kilometres it comes under the Waste Substance Act and farmers



Maurits and Jessica Tepper of
Eytemaheert farm in Drenthe.

must record it in their fertilizer records.’ Tepper will probably get his research because last summer, Eytemaheert became one of Wageningen University & Research’s experimental farms for nature-inclusive circular agriculture. Martin Scholten, director of the Animal Sciences Group, wants to explore new opportunities for putting circular agriculture into practice, he explains on Eytemaheert’s website. Tepper and his wife will still own the farm, but they are keen to have the nitrogen cycle quantified by Wageningen researchers. And they intend to start milking their Blaarkop cows, so that they turn into ‘dual-purpose’ cows producing both milk and meat.

NATURA 2000

Tepper thinks the Blaarkop cows can produce about 5000 litres of milk per year – half of standard production levels. He wants to make cheese with some of it. Wageningen could also study this business model with dual-purpose cows. ‘This business model works well near Natura 2000 areas,’ thinks Tepper. His guess is that his farm does not produce much ammonia, because he doesn’t import any nitrogen in the form of feed concentrate and artificial fertilizer, but actually removes nitrogen from the nature reserve with the bokashi. What is more, the cows spend most of their time out in the fields, so their cowpats and urine do not get mixed and no ammonia is formed that way. He is also thinking about how he can increase biodiversity on the land using mixed grass and clover, and creating hedgerows that produce hazelnuts, providing food and nature at the same time.

The representatives of the ministry and WUR are coming tomorrow to consult Tepper about a research programme at the farm that is aimed at finding out what effect his farming system has on biodiversity and soil life, and what effect the bokashi has on his nitrogen cycle. Tepper: ‘We must start measuring and finding out if it’s any good.’ >



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Hans Bergsma, director of Westerkwartier regional cooperative in Groningen.

‘The farmers are looking at how they could make use of each other’s waste streams’

Hans Bergsma, director of the Westerkwartier Regional Cooperative, is sitting in an office in the village of Noordoorn with four law students from the Hanze University of Applied Sciences in Groningen. They are poring over a folder that describes the key features of the planned new Food Factory. The food suppliers are listed on the left-hand flap: livestock farmers, arable farmers and horticulturalists from the region. Their clients are listed on the right-hand flap: hospitals, care institutions, schools and restaurants in Groningen. In the centre is the Food Factory, which is going to slaughter animals, process food and make meals. A regional food chain is in the making. The task of the law students is to figure out how participants in The Food Factory can sort out issues around intellectual property rights. The investors in the factory, including the regional cooperative, a project developer and processors of food and waste

streams, contribute their knowledge of processes and their patents. The law students have to work out how these things should be valued. This regional cooperative was started at the end of 2013 by an agricultural nature association of about 500 farmers, Staatsbosbeheer and a vocational training college, Terra

Groningen. Since then the Rabobank and an energy cooperative have joined too, says director of the cooperative Bergsma. The aim is to find new business models for farmers in the Westerkwartier region. Bergsma thinks The Food Factory can offer farmers in the regional supply chain 10 to 20 per cent higher prices, starting with 50 to 70 farmers who are going to supply food to hospitals and care providers in Groningen. The necessary planning permission for The Food Factory, to be built near Leek village, has been granted.

The Westerkwartier is farmed by conventional farmers who are looking for alternatives to the export-based business model, says Bergsma. ‘At the same time, we want to restore the relationship between farmers and the villages. So a transparent regional chain which enables consumers in Groningen to know where their food is coming from fits the bill.’

WAGENINGEN SPECIALISTS

Once the regional food chain is established, Bergsma wants to further develop circular agriculture, with WUR’s help. ‘Within the regional cooperative, livestock farmers, arable farmers and horticulturalists are now talking to each other about things like how they can use each other’s waste streams. This involves them in the issues around CO₂ and nitrogen. I hope Wageningen specialists can tell us how they can best look after the climate and nature.’

Bergsma wants to collaborate on this with the Fjildlab in nearby Buitenpost, where a local association, Noardlike Fryske Walden, is working on circular agriculture with Wageningen.

SO WHAT IS CIRCULAR AGRICULTURE, EXACTLY?

The Dutch cabinet wants the agriculture sector in the Netherlands to make a transition to a form of agriculture that primarily contributes to closing cycles, cutting emissions and reducing biomass waste in the food system. The cabinet also wants Dutch agriculture to strengthen the

socio-economic position of farmers in the supply chain and help make the countryside more attractive and dynamic. Further objectives are to benefit nature, improve animal welfare and strengthen relations between farmers and other citizens.

Wageningen alumnus Albert van der Ploeg has a small business with beef cattle and sheep in the north-east of Friesland. But today he is at a meeting in the Fjildlab, the innovation workplace for circular agriculture in north-eastern Friesland which he heads. He is also chair of the Noardlike Fryske Walden association, in which about 800 farmers and individuals collaborate on agricultural nature management and landscape restoration in this bocage landscape.

HEDGEROWS

The farmers aim at managing a small-scale landscape with hedgerows, field birds and biodiversity, says Van der Ploeg. The innovation workplace has eight expertise groups in which farmers can exchange knowledge on topics such as the use of manure and sustainable soil management.

Wageningen is closely involved in this Fjildlab. Researcher Durk Durksz is the project leader and Ingrid van Huizen, who was director of the Fryske Walden association for years, is now Wageningen's circular agriculture programme manager for the northern Netherlands. In this capacity, she links questions coming from the region to researchers in Wageningen. And not just in

Friesland, she adds. 'We want to find answers together with Eytemaheert and the Westerkwartier Regional Cooperative too.' Van Huizen: 'Our starting point for circular agriculture is the vision of WUR professor Imke de Boer. She wants us to use plant-based food solely for human consumption, and to feed livestock on grassland and waste streams. The farmers in this region have been practising circular agriculture for years. In the Fjildlab expertise circles, we are looking at the research needs of these farmers and we want to bring in the relevant scientific knowledge for them. One example is a project we have submitted on the use of

human faeces in agricultural cycles.'

Van der Ploeg is aiming at an agricultural transition. 'The farming system no longer matches the demands of our society,' he says, referring to the nitrogen and manure problem and the falling numbers of insects and field birds. 'We are looking for system-wide changes.'

Just like Eytemaheert, the Fjildlab wants to document the manure and nitrogen cycles of dairy farms and experiment with fertilizers such as bokashi and sewerage sludge. Van der Ploeg also wants to organize a closed manure cycle between livestock farmers and arable farmers, and to make use of waste streams from potato and beet farmers in the region.

'The farming system no longer meets the demands of society'

Albert van der Ploeg, who heads the innovative workplace Fjildlab in north-eastern Friesland.



NATURE-FRIENDLY

For the nature management side, he relies on the scope for experimentation in the European Agricultural Policy. Farmers can get grants for creating nature-friendly field edges and hedgerows. Van der Ploeg expects Wageningen to contribute knowledge of biodiversity and landscape to this process. Ecological landscape management requires a business model, adds Van der Ploeg. 'If you want cheap food, you get the monotonous landscape that goes with it, poor in biodiversity. If farmers want field birds, insects and a rich soil life, they have to do something to attract them. So the government must subsidize farmers to do that. There's nothing extraordinary about that, because Staatsbosbeheer and Natuurmonumenten get government subsidies for nature management too – they are in the same boat as the farmers.' ■

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