Wim de Vries: nitrogen law is ambitious

Minister of Agriculture Carola Schouten's nitrogen bill, which was tightened last week to make sure it got enough support to pass in Parliament, is very ambitious, says WUR nitrogen expert Prof. Wim de Vries. We cannot achieve the target of a 50 per cent reduction in emissions of nitrogen compounds in 15 years with technical measures alone.
First the Cabinet wanted reductions of 26 per cent by 2030 whereas the Remkes commission had recommended 50 per cent by 2030. Now Schouten's negotiations with three opposition parties have led to an

> The Netherlands cannot achieve its targets with technical measures and tailored solutions alone

obligation to cut levels by 50 per cent by 2035. 'You won't achieve that just with technical measures, such as less protein in animal feed, separating out manure, diluting manure and low-emission barns,' says De Vries. Livestock numbers need to come down too. Buying up livestock farms near nature areas does not do much to help the nitrogen emissions situation. 'The blanket of nitrogen compounds covering all of the Netherlands needs to be reduced. I'm all for tailored solutions near nature areas but you also need generic policies to achieve the target.' De Vries thinks the first priority is to get clarity on what farmers need to do. 'You need policy for large-scale farmers who want an intensive, sustainable business under strict emission rules and policy for farmers who want an extensive setup and to be paid for ecosystem services. In addition, you can buy out some of the farmers.' AS

Read a longer version of the interview with De Vries on resource-online.nl

Fat particles cause puddle of water on yoghurt

Some people mix it in while others prefer to drain the layer of water that forms on the top of yoghurt. But the unappetizing puddle may soon disappear thanks to a new WUR discovery.

Like cottage cheese, paint and coatings, yoghurt is a type of gel: a liquid containing small particles that hold it together. Given enough time, the particles separate from the water in a process known as syneresis. But some gels seem more prone to this process than others. Thomas Kodger and his colleagues in the Physical Chemistry and Soft Matter chair group have discovered why: it all depends on the particles the gel consists of.

Molecular friction

Not every gel has the same components. Gels like yoghurt contain droplets of fat that hold the liquid together while other gels, like paint, contain solid particles. These particles slowly attract each other and form clumps, expelling water like a sponge being squeezed. The type of particle in the gel affects how this process works. Fat forms smooth round droplets that glide past each other, pushing away the water. Solid particles, by contrast, are more angular and have a rougher surface, making it more difficult for them to slide past each other. As a result, they push away less water and display less syneresis than occurs in gels with fat particles, like yoghurt.
The researchers did not make their discovery in a bowl of yoghurt but in an artificial system in the lab. 'Edible gels contain all sorts of ingredients that could affect the study of syneresis,' explains Kodger. That is why the researchers simplified their gel down to three essential components: water, particles and a soapy substance. The latter forms a stabilizing layer around the particles. Because they used the same soap and conditions in making both gels, the type of particle was the only possible explanation for the difference in syneresis.

> **Smooth particles push away the water more easily**

Rough coating

Now researchers know that the smooth exterior of fat droplets exacerbates syneresis in gels they can find a solution for it. One solution might already be in the works at WUR. Researchers at Biobased Chemistry & Technology are designing a substance that forms an edible layer around fat droplets. 'The layer is rough, making it harder for the fat droplets to glide past each other easily,' Kodger says. He suspects that this rough coating will reduce the puddle of water on top of your yoghurt. Research in the coming year will show whether that is really what happens. NVTWH

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