



Knowledge Transfer Centre  
**DE MARKE**



**MANAGE LIMITATIONS, INVEST IN OPPORTUNITIES**



Producing milk in harmony with the environment – that’s the challenge for dairy businesses. We have a responsibility to produce healthy and excellent quality food from well managed surroundings, while at the same time paying attention to the different functions of the countryside. Knowledge Transfer Centre (KTC) De Marke has been highlighting opportunities for dairy producers for the past 25 years. And it’s work, as you can see from this flyer, that throws up many challenges.

I hope you enjoy reading this and I look forward to seeing you at De Marke.

Zwier van der Vegte,  
manager KTC De Marke

## DE MARKE: ‘CURIOUS’ FOR 25 YEARS

**How can a dairy unit on dry, sandy soil achieve a nutrient cycle that is as closed as possible? For almost 25 years that’s the question De Marke has been answering and we will continue to research new information.**

Every era has its new questions and challenges in the dairy industry, what they have in common is the achieved improvement of the efficiency. It means that research never ends.

At the start, in 1992, De Marke’s main goal was to improve groundwater quality. Within a year the first objectives were reached and so further goals were set. The search for improvement and refinement in the management to maximise the utilization of the natural resources and increase profit is more current than ever. How can dairy producers make as much milk as possible from feed and how do they achieve higher yields from the same number of hectares while using less manure and fertilizer?

New insights, innovative techniques and special ideas requires research, analysis, background information and users’ experiences. **At De Marke the focus is always on the relationship between the different components on the farm.**

De Marke links policy, research and practice. It’s role is to resolve limitations, examine attainability and, particularly, communicate and demonstrate these areas openly and transparently. With roots in sandy soil farmland and the Achterhoek area, De Marke is based in a place where community and dairying are in symbiosis. It has a European network and an endless task – to improve the world starts at the own farmyard.

### Crops

- Area: 55 hectares
- Productivity: 720,000kg of milk, so 13,000kg/ha
- Soil type: dry, sandy soil
- Crops: maize, grass, grass-clover
- Permanent pasture: 11 hectares
- Crop rotation: 44 hectares

### Milk production

- Number cows: 85
- Milk production: 8,500kg of milk/cow
- Grazing: 2 x 3 hours per day
- Winter ration: 60% grass, 40% maize
- Extra feed: maize grain, concentrate, minerals
- Crude protein ration: 14-15%



Jeanet Brandsma,  
Dutch Dairy Board:

“Knowledge Transfer Centre De Marke goes further than just practice. It

prevents problems from occurring within the wider industry. You can go too far with reducing minerals, for example. So De Marke delivers data and information to ground our points of view and helps us to make good policy.”

### De Marke

‘Marken’ is what farmland where producers jointly grazed their cattle used to be called. This historical name was the inspiration for De Marke and accentuates the sharing characteristics of the knowledge transfer centre. It’s also very appropriate if you realise that the dairy sector is working on her licence to produce and there for needs support of their neighbourhood. That’s a modern-day ‘Marken’.

*De Marke is the forerunner for dairy producers who couple durability and profit*



## SHARE EXPERIENCES AND MULTIPLY AMBITION

Growing fodder beet, fermenting manure, weeding maize, generate electricity, develop BEX and, ANCA (Annual Nutrient Cycling Assessment). During the past few years De Marke has done a lot of research to improve dairy management. It resulted in lists of dos and don'ts.

As a research centre, De Marke explores the boundaries. Not everything that is being tested is a success, but those results are also important to know. It prevents practical dairy producers from making the same mistakes. For example, lowering the percentage crude protein in the ration: 14-15% for milking cows is enough. More lowering has a negative impact on milk yield and, therefore, profit. A higher crude protein means losing valuable nutrients. And there are more management measurements that deserve imitation in practice: seed grass in maize, crop rotation with maize, grass-clover and grass. Win-win.

At the crossing with nature, environment and recreation the dairy sector should have a bright future. That's the fundamental idea behind De Marke. Global demand for dairy products is huge and the challenge for the future lies in improving efficiency and producing more milk. The focus for research lies in obtaining more profit per hectare and realising a higher feed efficiency for cows.



### Manure separation for higher utilisation

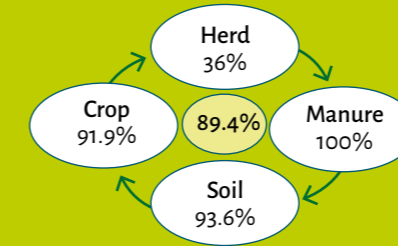
Solid and liquid manure fractions have specific characteristics. With the separation of manure every piece of land gets what it needs and that's beneficial for the utilisation of nitrogen and phosphorus.



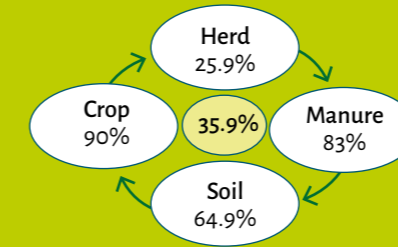
### Grass sown under maize

A catch crop binds the nitrogen and produces organic matter. By under sowing grass during the maize growing season the catch crop will be more successful.

### Phosphorus utilisation in cycle (%)

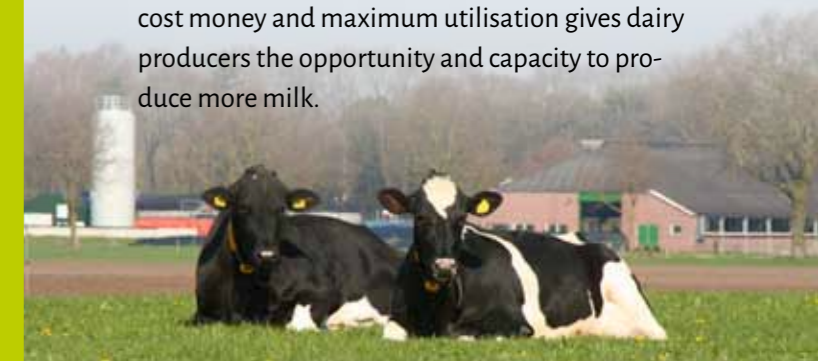


### Nitrogen utilisation in cycle (%)



### Nitrogen and phosphorus efficiency

A completely closed nutrient cycle will be of great importance after 2015, when milk quotas end. The target in a free milk market is to maximise the utilisation of all resources to produce as much milk as possible. To get the nutrient cycle on the farm closed is equal to a higher milk production per hectare and, therefore, more profit. Losses cost money and maximum utilisation gives dairy producers the opportunity and capacity to produce more milk.



Jeroen Nolles,  
CAH Vilentum in Dronten:

"At least once every year each student visits De Marke. They learn about efficient

mineral management and farming on dry, sandy soil. Thanks to the forward-thinking work at De Marke, students learn to see possibilities and think about opportunities."

### Current themes at De Marke:

- Sharp fertilisation and keep yield
- Maize in crop rotation
- Is it possible without herbicides?
- Seeding a catch crop in maize
- Balanced-feeding for nitrogen and phosphorus
- Limited grazing
- Manure separating and refinement
- More milk per kilogramme dry matter
- More durable herd
- Generate electricity
- Reduce greenhouse gases

# LIVE, WORK AND FARM TOGETHER

In it's quest for more durability, De Marke continues to search further. From efficient nutrient use, to the responsible use of water and herbicides, as well as a greater focus on animal welfare and health. The focus even goes beyond the farm borders: nature, landscape, energy. All areas for special attention are being combined.

Collaboration is the key word. As part of the 'Cow and Opportunities' project, De Marke works closely with producer colleagues. The synergy has resulted in the development of BEX and de ANCA, both tools to utilise minerals more efficient. With drinking water company Vitens, De Marke works on advice that, if followed, should lead to cleaner (drinking) water. The collaboration even goes abroad. Through the European 'Dairyman' project, De Marke has close contacts with other research centres in France, Ireland, Luxembourg and Germany. By investing in opportunities, we make the entire dairy sector stronger.



## De Marke Foot path

There is a 5.5km nature walking trail across De Marke. Hikers can enjoy the variety of agricultural landscapes with wooded banks, ponds, arable frames and moors. There's a wealth of flora and fauna, including birds, frogs,

ducks, deer and kestrels, and also a diverse array of plants like the wood anemone, tansy and honeysuckle. It 'costs' De Marke about 1.5 hectare (less productive) farmland and the output is a lot of goodwill from the walkers.

## Cycles on De Marke

- Manure cultivation: separation and refinement
- Nitrogen from artificial fertiliser: 15kg/ha
- ammonia- emission: 20.1kg N/ha
- N-surplus: 130kg/ha
- P-surplus: 1kg/ha
- Nitrate in ground water: 45mg/l



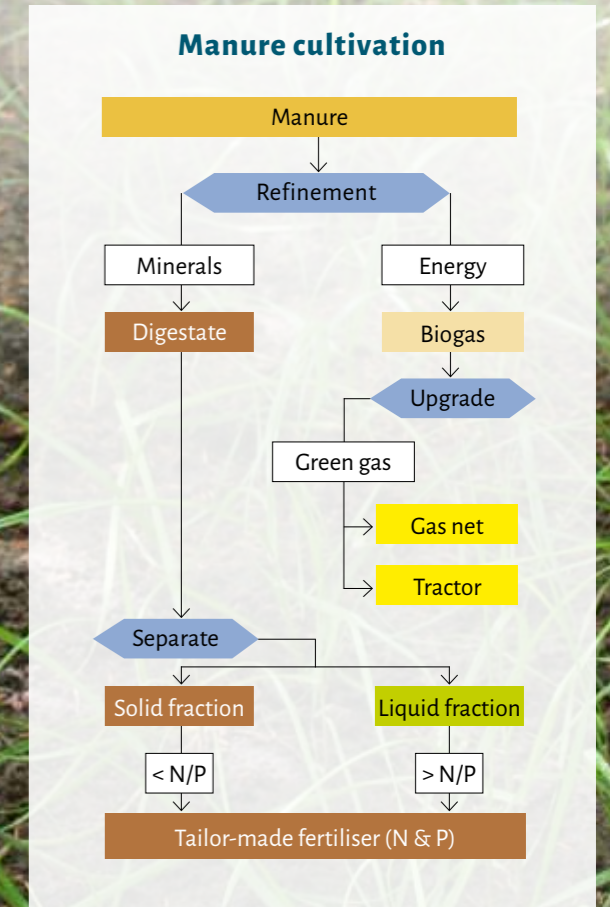
Servaas Damen, advisor agriculture at Rijkswaterstaat, Lelystad:

"De Marke carries out research on measurements, which comply to more severe

law- and issuing of rules. What is effective, what is realisable, what is practical? The output of data gives essential information for government policy and is also very important for the dairy sector."

## From manure to fertiliser

With the production of biogas and small scaled manure refinery, manure is separated to a high quality and easier to apply fertiliser. Next to generating electricity, the manure is divided in a solid and liquid fraction (after separation) and has specific characteristics to use directed. It results in a tailor-made fertilizer, depending on the crop need and the soil condition. So, the next question is: can we do without any artificial fertiliser?





### Research as base

Measure, measure and measure again. A lot of researchers are active on De Marke. Each one of them with their own specialism, but with the same goal: examine the practical attainability of new developments.



### Free fill up

With a solar battery and a loading point car drivers can fill up their electrical car for free at De Marke.



### See for yourself

De Marke opens its doors to the public and shares its knowledge and experiences. About 4,000 visitors come every year. You are welcome as well, as is your study group. Please contact us to make an appointment.

Knowledge Transfer Centre De Marke  
Roessinkweg 2  
7255 PC Hengelo (Gld)

T: 0031 (0) 575 467323  
E: [demarke.po.asg@wur.nl](mailto:demarke.po.asg@wur.nl)  
I: [www.projectdemarke.nl](http://www.projectdemarke.nl)

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