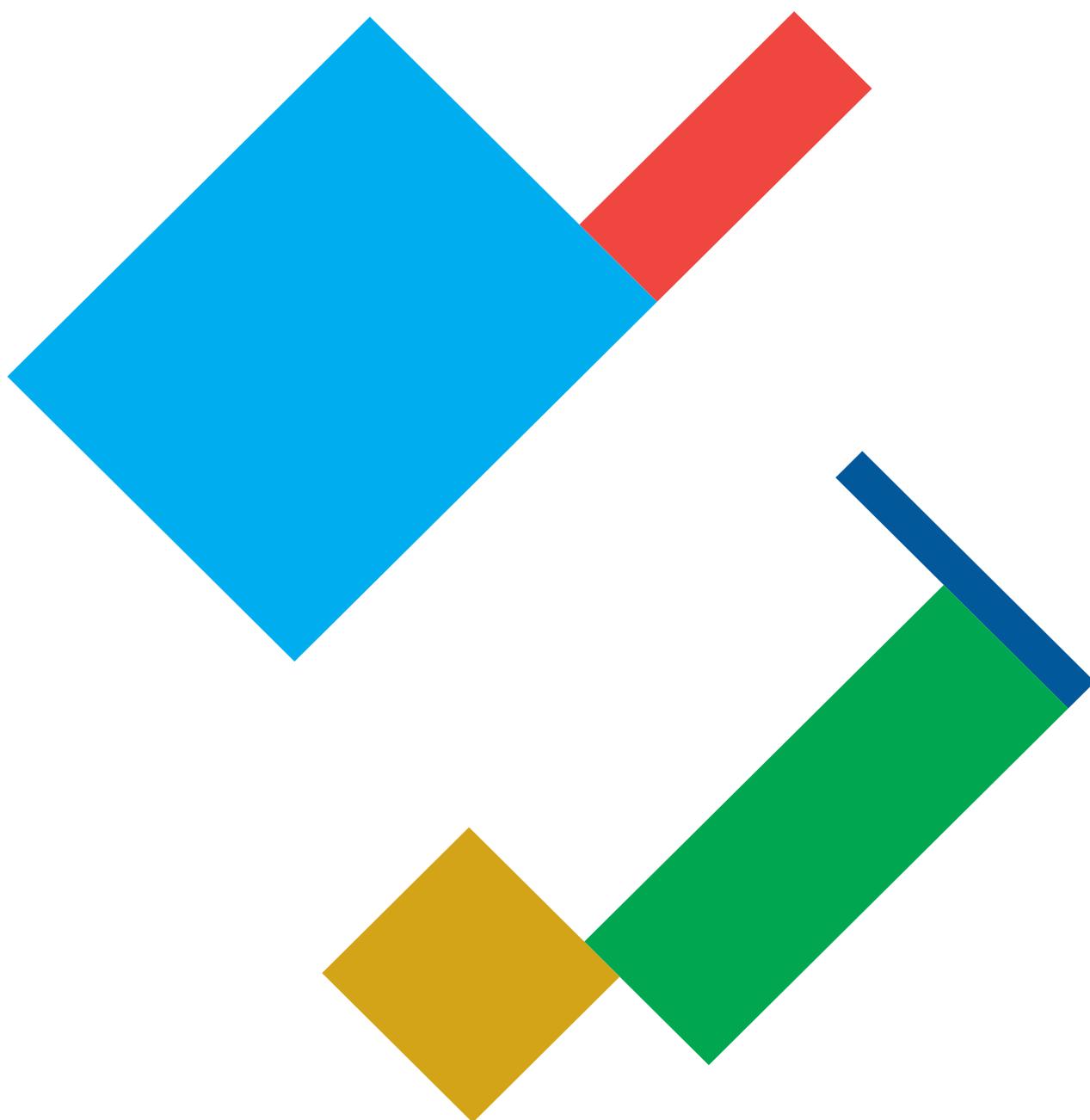
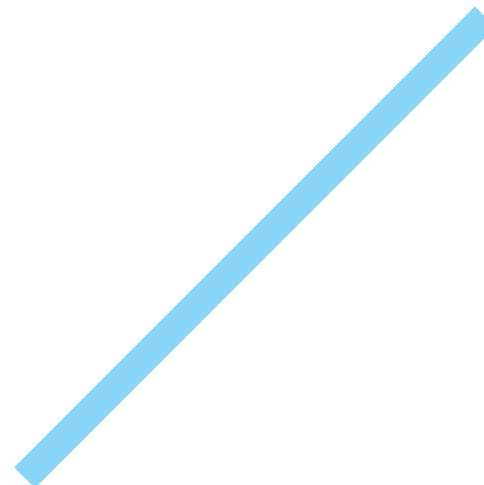


DAIRY AT THE HIGHEST LEVEL

On the economic importance and quality of the Dutch dairy sector





Quality and cooperation

The Dutch dairy sector largely owes its strong global market position to high, consistent quality and a capacity for innovation. From our world-famous Gouda and Edam cheeses to milk powder and high-quality ingredients: dairy from the Netherlands is synonymous with the highest quality. This quality is the result of Dutch dairy farmers' and producers' years of experience and craftsmanship, as well as close cooperation with knowledge institutes and the government. Take a look behind the scenes of a high-quality food industry with a unique quality system.

Dutch dairy at the highest level

We never really talk about quality. We simply take for granted the fact that our products are in order every day. That's simply a precondition. Consumers must be able to trust that every Dutch dairy product is safe. They should also know that every piece of cheese or packet of yogurt will have the same familiar taste, time after time. But we can't simply sit back and assume this will happen. It takes great effort to keep the quality of our products at the same high level, day in, day out. That's what everyone in the Dutch dairy chain does best. Because we have a reputation to keep.

Our dairy products are appreciated worldwide. Dutch dairy has a rock-solid international reputation. In order to maintain this, we are

continuously working on improving the quality of our products, and safeguarding our processes and making them more sustainable. We all do this together. Not only dairy companies united in the Dutch Dairy Association (Nederlandse Zuivel Organisatie, NZO), but also dairy farmers, the government and knowledge institutes. Together, we have built a solid foundation over the years. Helped by the favourable climatic conditions, the strategic location of The Netherlands and, of course, craftsmanship, dairy has become a strong economic sector that makes an important contribution to the Dutch economy.

Together, dairy farming and the dairy industry account for tens of thousands of jobs and billions of

euros in turnover. This is a stable industry, which is deeply rooted in Dutch society. That makes the dairy sector robust. Precisely because of this we can handle crises, such as the coronavirus, trade wars or financial turmoil. The ongoing attention we pay to the quality of our products and our production processes pays off in these circumstances.

Quality makes the difference on the global dairy market. This distinguishes us from the competition. And that allows us to make an important contribution to global demand for high quality products. In a world in which the population is growing rapidly and raw materials are becoming scarce, there's a need for safe food that fits into a healthy and sustainable diet. Quality is our trump card.



HEIN SCHUMACHER,
is CEO of FrieslandCampina
and chairman Dutch Dairy
Association (NZO)

Quality and sustainability

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From grass



to glass



Around the world, Dutch dairy products are renowned for their high quality and proven food safety.

This is the result of a unique chain quality system.

A look behind the scenes of this high-quality food industry. ▶

Dutch dairy quality: a combination of craftsmanship and safety



Strong links

The saying 'a chain is only as strong as its weakest link' definitely applies to the food industry. If anything, at any stage in the process of production, processing, storage, packaging, transport and distribution is less than optimal, it will be apparent in the quality of the end product. For this reason, the Dutch dairy industry has developed a unique chain quality system in which each part of the chain is responsible for its own business processes, and for monitoring and managing these. Insight into the chain as a whole ensures individual links do not operate in isolation, but are aware of what the impact is of an imperfections at the beginning, for example on the farm, on quality further along the chain. The Dutch dairy quality chain consists of five links: feed, farmer, transport, milk and factory.

1. The way to a cow's heart is through its four stomachs

Cows thrive in the Dutch climate, and on our rich pastures. Precipitation and temperature are favourable for grass growth. The cow digests its feed via a digestion process that passes through four stomachs. The farmer plays an essential role in feeding cows. Dutch livestock farmers have a great deal of knowledge about soil fertility, land use and grassland management. As a result, cows can graze outdoors during grazing season and grass can be mowed and used as feed in the barn, or during the winter.

Ultimately, these conditions result in Dutch cows producing excellent milk; a nutritious, natural drink rich in fat, protein, lactose, vitamins and minerals.

NVWA and SecureFeed

The dairy farmer processes part of the grass into grass silage for the winter. The silage process preserves the grass and samples are taken to check the quality of the grass silage. At the same time, this sampling enables the dairy farmer to fine-tune cows' feed rations, for example by supplementing this with corn and concentrates.

The General Food Law (GFL) specifies what animal feed may or may not contain. By adhering to this, the Dutch dairy chain works in accordance with EU laws and regulations. The Dutch Food and

Consumer Product Safety Authority (De Nederlandse Voedsel- en Waren- autoriteit, NVWA) supervises and manages additional requirements. Inspections are carried out by independent quality organisation SecureFeed, which uses GMP+ certification for this purpose. Dutch dairy farmers may only buy animal feeds from suppliers affiliated with SecureFeed.

2. The Dutch dairy farmer: modern milk manager

The dairy farmer is at the source of every dairy product, in a literal and figurative sense. The quality of the milk he or she supplies is largely determined by good farm hygiene, animal health and welfare, milk production and milk storage. This link in the dairy chain is also supervised in accordance with EU laws and regulations. The Dutch dairy sector imposes a number of additional quality requirements. Important standards that are taken into consideration include maintenance and hygiene of buildings and machines, use of medication, pest control, crop protection agents and the ways in which manure, waste and hazardous substances are handled on the farm.

Healthy cows: a key priority

A healthy cow that feels at ease produces the best milk. Cows spend a large part of

the year grazing outdoors. The Dairy farmers' barns, in which they spend the rest of their time, are increasingly open, light spaces that suit cows' natural behaviour. Prevention is better than cure, so when it comes to animal health, the dairy farmers rely on a policy of prevention. Thanks to good care and good feed, cows' welfare improves and the use of medication is reduced to a minimum. In accordance with EU guidelines, the farmer is responsible for proper administration of possible animal diseases and the use of medication. To this end, each dairy farmer works with a permanently appointed veterinarian, with whom a farm health plan and farm treatment plan are drawn up. Animal health is constantly monitored by the Independent Animal Health Service (Gezondheidsdienst voor Dieren, GD). In addition, the dairy sector has implemented an additional package of quality requirements for the prevention and/or control of Salmonella infections and paratuberculosis in dairy cattle.

Hygienic milking and storage

Strict hygiene requirements apply to milking machines or robots and milking parlours. After milking, milk is rapidly cooled and stored in a milk tank at four degrees Celsius. The quality systems used by the farmer are based on EU legislation, supplemented by the Dutch dairy sector's specific, more extensive quality systems. Milk quality is monitored by sampling each delivery when milk is collected from the farm, and once again when it is delivered to the dairy. Before the milk tanker arrives at the dairy factory, the milk has already been tested for the most important antibiotics and the first test results are already available. If there is anything suspicious about the milk, the milk tanker will not be unloaded, obviously. Each milk tanker driver is specially trained to sample and assess milk on the basis of its odour, colour and temperature. In addition, milk samples are examined on many more quality

parameters in a specialist laboratory. Furthermore, each dairy farm is periodically visited for an assessment of the quality system. Deviations must be rectified within a set period. In the event of an unacceptable shortfall, the milk is refused and the dairy farm is registered as a 'problem farm'.

3. Safe transport is a matter of cleanliness

Every day, there are 175 milk tankers on the road in the Netherlands. Together, these make 850 journeys from dairy farm to dairy plant. Over 700 drivers are deployed for this, all of who have been trained to carry out initial quality checks on the farm. Dutch milk tankers have been specially developed for milk transport with a focus on maximum hygiene and food safety. In this way, 14 billion kilos of milk are transported each year, from 1.58 million cows on approximately 16,260 dairy farms. Every hour, one and a half million kilos of milk are delivered to the processing locations.

Hygiene and inspection

Milk tanker drivers also work in accordance with EU laws and regulations. These relate to the retention period of documents, the HACCP hygiene code, and the hygiene, cleaning and disinfection of milk tankers. Strict standards apply to drivers' personal hygiene and health regulations, as well as the calibration of measurement and recording equipment. In addition to these EU regulations, the dairy sector has introduced additional requirements with regard to taking and storing samples and monitoring for the presence of antibiotic residues. The Netherlands' Controlling Authority for Milk and Milk products (COKZ) monitors compliance with these requirements on behalf of the government. For example, the COKZ accompanies milk tanker drivers twice a year, takes care of driver exams and checks unloading points at each processing plant ten times a year. ▶



14

Billion kilograms

In the Netherlands 14 billion kilos of milk are transported each year, which come from 1.58 million cows on approximately 16,260 dairy farms.



3 to 5

Million

Between 3 and 5 million milk sample analyses are carried out in the Netherlands each year, across all processing steps.

4. Milk: the product of checking and double-checking

A very wide variety of dairy products for the domestic and export markets are produced from farm milk. Guaranteed, fixed high quality, safety and high-quality composition are preconditions for the success of the Dutch dairy industry. In addition to Dutch and EU legislation and regulations, the dairy chain has implemented stringent additional requirements. Ensuring quality is not only in the interest of dairy consumers, but also of dairy farmers. Dairy farmers' payments are based on the quality of the milk supplied. Quality checks are carried out on, among other things, residues of animal medications such as antibiotics, contamination levels and traces of harmful bacteria, as well as on fat, lactose and protein content, fat acidity, cell and germ count and freezing point.

Measuring knows

In addition to monitoring the aforementioned parameters for milk, quality is additionally safeguarded by means of a monitoring program for contaminants and residues. This is coordinated by the Dutch Dairy Association (NZO). This is related to legal requirements regarding the presence of residues of veterinary medicines, such as antibiotics, but also pesticides and environmental contaminants such as dioxins, PCBs, PAHs and melamine. This research is carried out by ISO 17025-accredited laboratory Qlip.

Furthermore, farm milk is assessed according to the National Plan Hygiene Package, carried out by NVWA laboratory Wageningen Food Safety Research (formerly RIKILT). The National Plan applies to each EU member state and therefore provides a good insight into the quality of milk in different EU countries. Finally, the Dutch dairy industry operates its own research programme aimed at continuous improvement of Dutch dairy food safety and quality. This research programme devotes

a great deal of attention to potential future risks, so that timely measures can be taken if necessary.

5. From farm milk to certified dairy product

Once the milk has been delivered to one of the Dutch dairy industry's processing locations, the quality of the dairy products is further guaranteed by the strict quality system used in the plants. Quality and supervision in this part of the chain are further guaranteed by the Dutch government and industry. The largest share of milk produced in the Netherlands (63%) is processed into milk for drinking or related products and cheese. 14% is processed into milk powder, 7% into concentrated milk, 2% is made into butter and the remainder (14%) is processed into other foodstuffs and products.

Three to five million analyses

Samples are taken and analysed at several stages of all processing steps, for semi-finished as well as finished products. Equipment is also regularly calibrated and the quality of packaging materials checked. As many as three to five million analyses are carried out each year, which is relatively speaking far more than in other major dairy-producing countries. The production sites' quality systems are supervised by the government and tested and certified by independent bodies, in accordance with European and Dutch legislation and regulations. Furthermore, the dairy industry is compliant with non-standard and/or additional requirements dictated by the food authorities in countries to which dairy products are exported. Larger customers such as retailers require a GFSI (Global Food Safety Initiative) food safety certificate. Dairy companies may receive approval for this from the COKZ, indicated by a symbol and a number on the packaging.

Dedicated quality system for cheese

The COKZ also supervises dairy processing

plants on behalf of the government. This involves close examination of production processes, dairy products and flows of animal by-products. If the assessment is positive, the production location is awarded (extension of) formal recognition as a dairy processing company. Companies require this recognition to apply for export certificates. Specifically for cheese, the dairy sector has set up a supplementary process certification system. This is a private system in which participation is voluntary. Most companies exporting Dutch cheese participate in this system. Checks focus on process steps specific to cheese production and further processing.

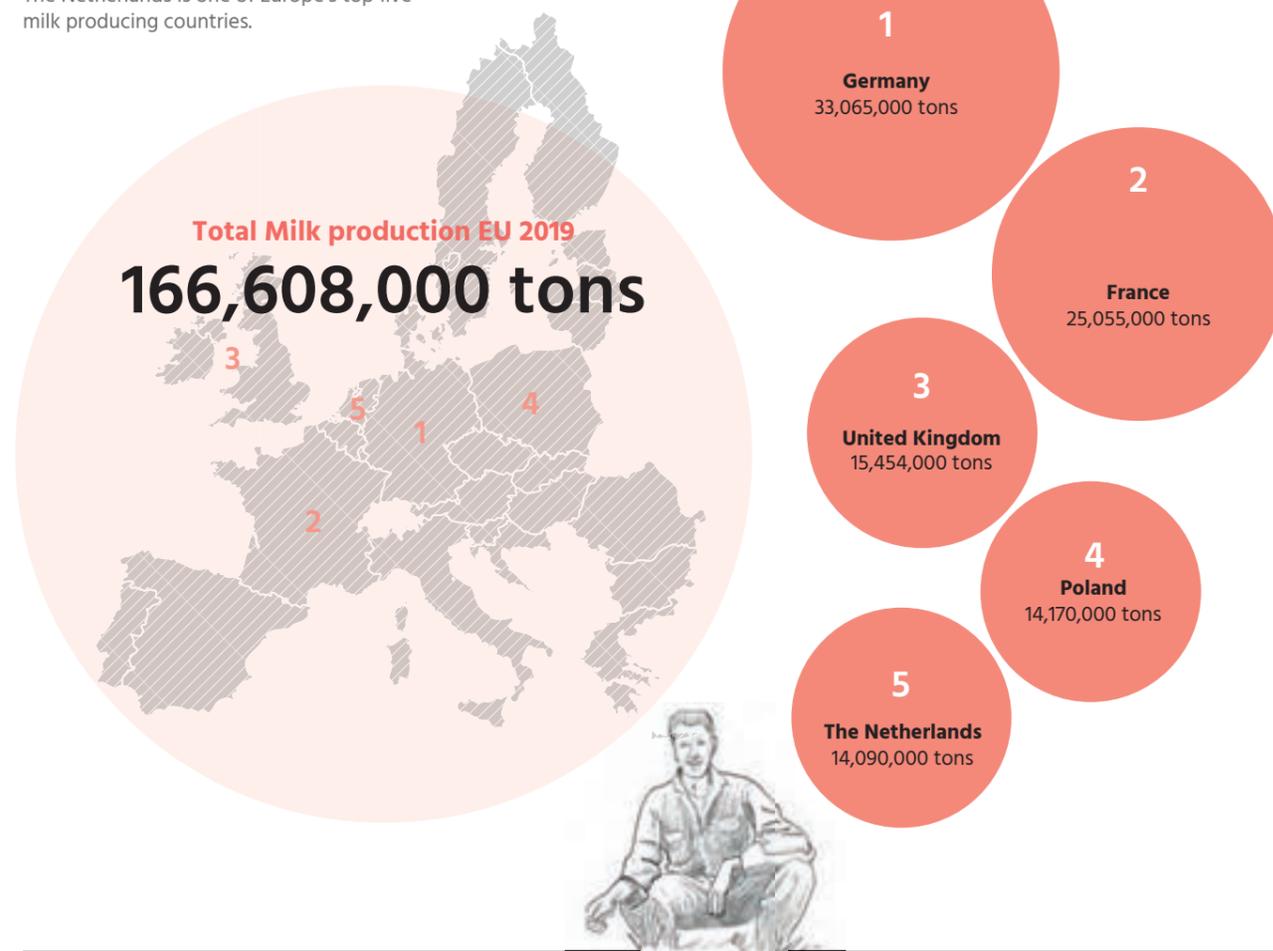
International market position

To summarise, we may say that the Dutch dairy industry has a unique chain quality system in place, which adds significant value to its dairy products. In addition to excellent quality in the areas of taste, extensive range and powerful presentation of Dutch dairy products, the quality of Dutch dairy plays an important role in the sector's leading position in the world. ■

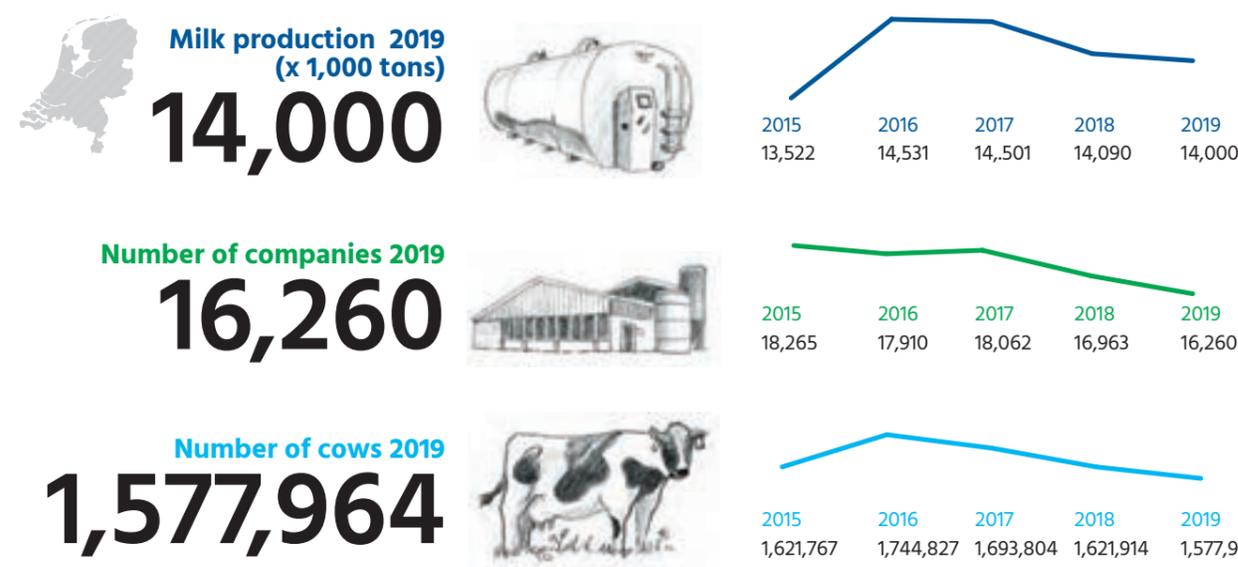


Milk production EU

The Netherlands is one of Europe's top five milk producing countries.



Milk production in the Netherlands 2019



Sources: CBS (dairy cows and dairy farms), RVO (milk production in the Netherlands), IDF (top 5 milk production 2018).

Dutch dairy products travel a long way before they reach the consumer's refrigerator. They pass several checkpoints manned by dairy watchdog COKZ.

'We're like the community police officer who knows exactly what's going on'

Before cheese reaches the shop or supermarket shelves, quite a few people will have been involved. The COKZ (Netherlands Controlling Authority for Milk and Milk Products) is active throughout the chain from farm to supermarket shelves. Through this Netherlands controlling authority, the Dutch government supervises the dairy sector, among other things. Inspection takes place at several times and locations. Farm milk inspectors regularly follow milk tankers that transport milk from farms to processing plants to carry out checks. Milk tanker drivers take samples of raw milk from cooling tanks on farms and analyse the quality, temperature, odour and colour. They also test the milk for antibiotic residues. Milk that does not meet the quality requirements is not unloaded. Independent laboratories also check the milk samples for, among other things, antibiotics, protein and fat content, and bacterial counts. "We safeguard quality and ensure no mistakes are made," says Wim van der Sande, Director of COKZ. For example, the inspection



WIM VAN DER SANDE is Director of the COKZ (Netherlands Controlling Authority for Milk and Milk Products) an independent body that monitors the quality of dairy products on behalf of the Dutch government.

The dairy supply chain in pictures
Yolanda Dijkshoorn is a dairy farmer and co-owner of Dijkshoorn dairy farm in Schipluiden.

body takes care of practical tests and examinations for milk tanker drivers, who are issued with certification if they pass. They need to meet a variety of criteria to receive their certificates, such as being able to take milk samples correctly.

Inspectors in action

At the processing plants, COKZ also supervises food safety on behalf of the Dutch Food and Consumer Product Safety Authority (NVWA). Processing companies, for example, require EC approvals, as they produce food. "There is an EU hygiene directive for this, and you can find the related mark of approval on cheese labels," explains Van der Sande. "We carry out an extensive audit once a year." The COKZ keeps a register of companies it supervises. When cheese has been prepared, an inspector springs into action. "In addition to the food safety research on cheese samples, to exclude *Listeria monocytogenes* for example, a proper quality check is carried out. It's all about marketing standards. How does the product smell and taste? This is different for a Gouda than for a Leerdammer. And does a 48+ cheese really comply with the requirements for a 48+ label?" For dairy export, the COKZ has a management programme in place, featuring a variety of connecting modules for product groups such as cheese, curd, grated cheese and butter. Inspectors regularly take random samples and the COKZ issues export certificates if ship-

ments comply with the legislation and regulations that apply in the Netherlands and the importing country. For example, producers are not required to have batch checks carried out and wait for the test results before they can export their produce. The final element is an annual administrative final inspection. "At this point, we re-examine the entire process. For example, did any farmer provide milk which didn't meet the quality standards and when was this discovered?"

Source of knowledge

COKZ employees (70fte) in Leusden, who work across several teams, each of which deals with a specific field, such as food safety, farms or inspections. There is a great deal of knowledge in-house, says Van der Sande. Ever since 1901 - which is when the COKZ was founded. When EU regulations made it obligatory to appoint

Because great care is taken to get taste, aroma and fat content exactly right, real Gouda cheese sets itself apart from the fakes

a food hygiene supervisor; the Ministry of Agriculture, Nature and Food Quality opted for the COKZ. The NVWA, which was given the task to appoint a body, authorised the independent COKZ to oversee the dairy sector. The 'hygiene package' consists of five regulations with guidelines for producers. These include quality of raw materials, cross-contamination, cleaning and staff training. "This was a continuation of the existing division of tasks, based on our knowledge. However, this approach is also more efficient. We pay a great deal of attention to quality in combination with food safety. As a result, NVWA auditors no longer visit us. We work together closely, according to protocols, and each year, we determine what actions we will be taking doing on behalf of the NVWA".

Independent

Independent administrative bodies that carry out government tasks are a typically Dutch phenomenon. Van der Sande reached this conclusion when working for the Permanent Representation of the Netherlands at the European Union in Brussels. "This has grown historically. In the Netherlands, the initiative to monitor quality often came from the sectors in question themselves and was not imposed by the government. Our dairy sector is a striking example of this. The way in which we make cheese is a true specialism. The accumulated experience is reflected in our organization." The fact

that independent administrative bodies such as the COKZ are governed by private law was something he frequently needed to explain in Brussels, as well as to foreign auditors. "Before long, we were seen as a commercial party charging fees, that just might be paid directly to inspectors", he laughs. Van der Sande clarifies that the COKZ is an independent foundation, over a hundred years old, that carries out its tasks on a not-for-profit basis. The six-member board chooses a chairperson from their midst, who has to be approved by the Ministers of Agriculture, Nature and Food Quality and Public Health. These parties also need to approve the appointment of the other members. "We pay a great deal of attention to the independence of our board. These people do not come from the sector itself and have gained management experience in different areas. Our chairman, for example, formerly worked at the Rabobank".

Reputation

However, COKZ is a household name abroad, says Van der Sande. "The NVWA only certifies food safety, which, among other things, prevents transport of raw materials from areas in which animal diseases have been found. We guarantee quality and issue our own certifications, such as the certification for Gouda cheese. Gouda Holland, for example, has a protected designation of origin in Brussels, which is often how foreign customers know about us. But internationally, we always present ourselves together with the NVWA and the Ministry of Agriculture, Nature and Food Quality". Several countries attempt to imitate Gouda cheese but according to Van der Sande, these products don't come close to Dutch quality. Because great care is taken to get taste, aroma and fat content exactly right, real Gouda cheese sets itself apart from the fakes. And this quality is in demand internationally. Every year, the inspection authority issues more than 80,000 certificates, for everything from small batches to full containers. The sector is considering introduction of a

Dutch quality label that indicates that the milk from which the cheese is made was definitely sourced in the Netherlands.

Close cooperation

According to Van der Sande, the secret of The Netherlands' dairy success lies in cooperation. "I sometimes compare the COKZ with a neighbourhood policeman who knows exactly what's going on. We have close ties to the sector, but remain independent. Both the NVWA and the Accreditation Council audit us. We also receive regular visits from the European Commission and authorities from countries outside the EU such as the United States and China. If we could be compared to the neighbourhood police, then the NVWA would be a SWAT team, ready to act when things get out of hand. We create official reports, they determine the follow-up. This could be an administrative fine or revocation of a permit. For the latter step to be taken, though, a company must have really made a mess of things. Recurring appearance of infections such as Salmonella or E.coli, for example, or breaches of hygienic working practices." Van der Sande firmly believes in this collaborative working model. "If one single large organization carries out all inspections, they will have trouble adapting to developments and innovations in the field. He is convinced that the Dutch dairy chain has achieved a high level of safety and quality thanks to integrated knowledge and experience and independent supervision. ■"

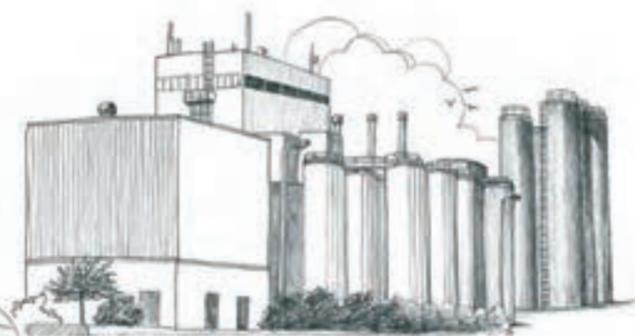


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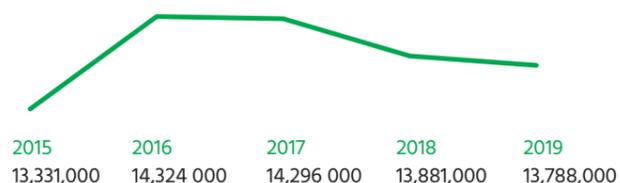
certificates for small and large batches of Dutch dairy products are issued each year by the COKZ.



From farm produce to dairy product

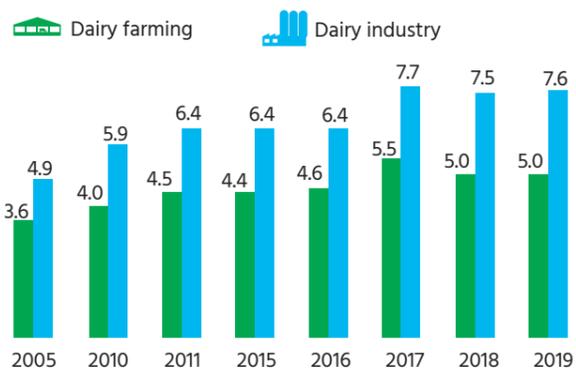


Milk supply Netherlands 2019
13,788,000 ton



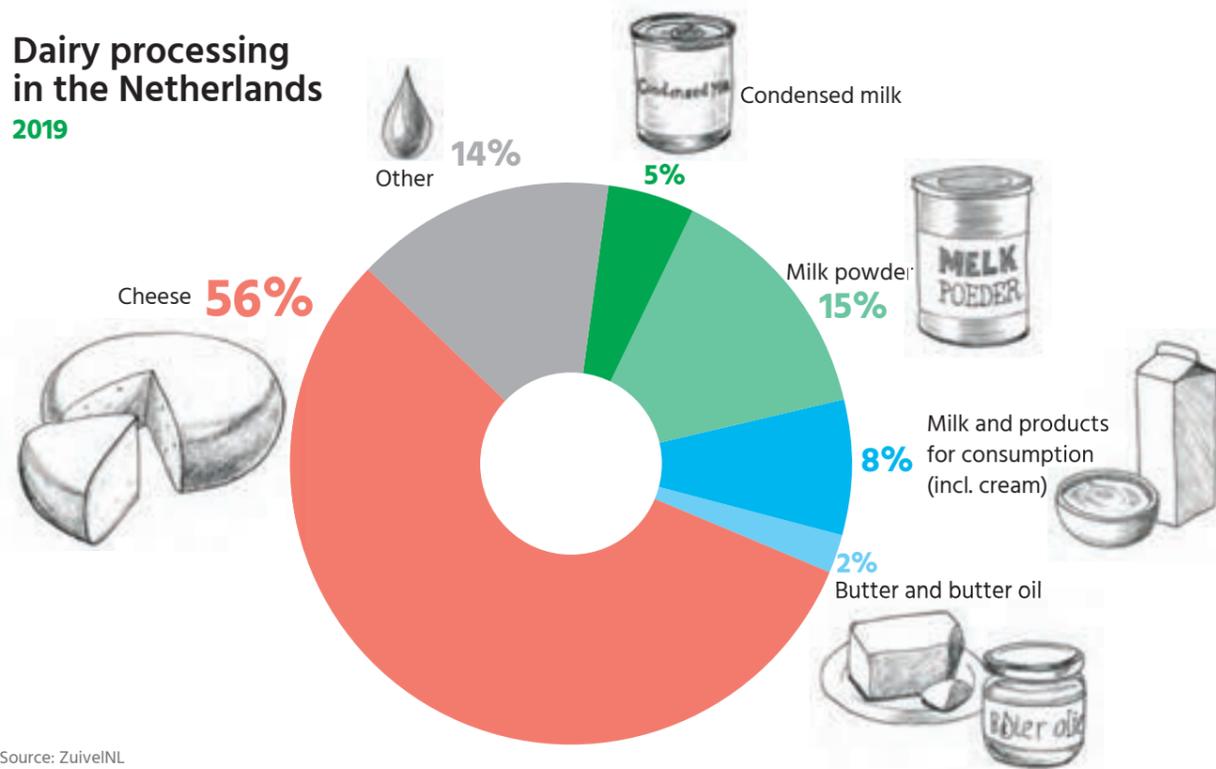
Source: RVO.nl

Production value (in billions of euros)



Source: Eurostat (dairy farming), ZuivelNL (dairy industry; 2019 is estimated).

Dairy processing in the Netherlands 2019



Source: ZuivelNL

International recognition for local pride

The Protected Designation of Origin and the Protected Geographical Indication of Dutch cheeses significantly boost exports. What's more, the quality schemes also make generic Dutch dairy even more appealing.

Dutch people placing piece of familiar Gouda cheese in their shopping basket while on holiday abroad just might be unpleasantly surprised. This cheese might turn out to taste nothing like they're used to. Chances are that the text on the packaging is missing the word 'Holland'. That means the delicacy might have been prepared outside their home country. Only Gouda cheese with the protected title 'Gouda Holland' is guaranteed to have been produced in the Netherlands, according to a traditional recipe. With Gouda Holland, you know what you're buying.

100% home-grown

The quality and reputation of real Gouda and Edam cheese were reasons for including these cheeses in a European quality scheme based on geographical characteristics in 2010. Agricultural products, food and wines that deserve this Protected Geographical Indication (PGI) come from a specified region and meet strictly monitored criteria. Feta cheese, for example, may only be called 'Feta' if it has been produced in Greece. Cheese sold as Gouda Holland and Edam Holland are 100% Dutch when it comes to recipe, milk, place of ripening, craftsmanship and pride. Preparation using unique bacterial cultures has a long history, which makes Dutch cheese special.

International success

Not only Dutch people on holiday abroad might be disappointed by cheese they thought would be familiar. Consumers and producers worldwide expect excellent quality and a particular taste from this Dutch dairy product. Precisely these characteristics ensure international success, which is why European quality schemes such as the PGI are so important for export. The PGI emphasises the fact

that reputation and quality are inextricably linked to a specific geographical origin. Makers of Gouda Holland cheese, for example, have worked according to traditional processes developed by cheese-makers over the centuries. They refined the preparation and maturing as their knowledge of technology, quality and hygiene expanded. This led to a growth in supply and demand, so that production eventually moved from farm to factory.

Complex

The centuries-long development of Dutch production conditions for milk and cheese has taken local craftsmanship to a high, consistent level. The government stimulated this with research, education and information. A complex of factors that cheese-makers in other regions cannot imitate affects this art of cheese making. For example, traditional bacterial cultures, also known as starters, give each type of cheese its specific character. Furthermore, the quality of the milk is determined by the cows and their environment. The maturation of cheeses on wooden shelves under ideal climatic conditions ensures gradual and perfect maturation. What is the end result of this working method? Gouda Holland cheese that has matured for at least 28 days is called 'young' cheese. Longer maturation results in matured or 'old' cheese. After

a year, the product can be consumed as a 'fully matured' cheese. During ripening, the characteristic taste develops from mild to savoury. During the ripening process, the structure of the cheese becomes firmer and the longer the cheese ripens, the more flavour it acquires.

Connected to the source

The PGI is concerned with reputation and origin, whereas the Protected Designation of Origin (PDO) specifically covers origin. Products covered by the European PDO quality scheme are strongly linked to the places they come from. North Holland Gouda has held PDO-status since 1996. The product meets all the criteria for Gouda Holland, but in this case the milk comes from cows that graze on designated pastures in the province of

Noord-Holland. These areas are surrounded by the IJsselmeer, Wadden Sea and North Sea. This gives the grass, and therefore the milk, its specific character. Beemster cheese is an example of a North Holland Gouda. Another PDO is the Frisian Kanter 'nagelkaas' cheese.

A third quality scheme is the Guaranteed Traditional Speciality (GTS). This does not inform the consumer of the origin in any way, but about traditional characteristics such as the composition or the way in which a product has been prepared. 'Boerenkaas' (farmers' cheese) is a GTS product that cheese makers are not allowed to prepare in a factory. With craftsmanship as the distinguishing factor, unpasteurized milk is processed by the farmer on a farm into farmers' cheese.

Consistent quality

The dairy sector has a quality assurance system in place that is attuned to European and Dutch legislation; the dairy sector itself expands on this with additional safety and quality requirements. In 2017, the sector was praised by the Dutch Food and Consumer Product Safety Authority (NVWA), which stated that the Dutch dairy sector maintains 'a very high level of milk and dairy produce food safety'. The system guarantees the quality of cows' milk through the professionalism of the dairy farmers, transport, reception at the factory, cheese makers' knowledge and skill and, ultimately, the end product: a ready-to-eat cheese. Quality systems throughout the chain contribute to the monitoring of the high quality of the cheese. Each Gouda Holland cheese is also

provided with a unique code during preparation. The Netherlands Controlling Authority for Milk and Milk Products (COKZ) links these codes to the inspection data in a register. Once the COKZ has carried out the final inspection and approved the taste, the cheese is awarded the Gouda Holland quality mark.

Traditional, carefully monitored processes, which result in an excellent taste, have brought Dutch dairy products worldwide fame. European geographical quality schemes protect cheeses such as Edam Holland and North Holland Gouda. That is why these are vital for Dutch cheese and other dairy produce exports, and for the Netherlands' reputation as the world's top producer of cheese. —



15.5%

Products with a geographical designation account for 15.5% of total EU exports of agricultural food products.

€75 billion

Agro-food products with a EU geographical designation have a combined sales value of EUR 74.76 billion.



EVERT JAN KRAJENBRINK is Agricultural Council at the Dutch Embassy in Japan.

'Dutch cheese on the Japanese market'

Taste and origin of food are essential aspects of quality for the Japanese, says **Evert Jan Krajenbrink**, Agricultural Council at the Dutch Embassy in Japan. This makes Japan an important outlet for Dutch dairy products. "At the Dutch embassy in Tokyo, I maintain contacts with Japan's agricultural sector. We support the export of Dutch dairy technology and products to Japan, partly by keeping the market open. In Japan, we promote Dutch products by, for example, organising trade fairs, trade missions and tasting sessions. Japan is our largest market for cheese outside the EU. Exports grew from 87.7 to 97.7 million euros in 2019.

The Japanese prefer regional products. For them, origin is an essential aspect of the quality of domestic as well as foreign products. When it comes to food purchasing priorities, 'taste' comes first, according to research. 'Price' comes in fourth place, after 'health' and 'origin'. The Japanese mainly enjoy Dutch hard cheeses with drinks. They will often buy different kinds of cheese pre-cut in a single packet, so they can try them all. Last year, we entered into a free trade agreement with Japan. An agreement has been made to lower import tariffs on our popular semi-hard cheeses from 29.8% to zero over the course of fifteen years. Japan will supervise European geographical quality marks such as PGI for Gouda Holland and Edam Holland cheese. They consider this protection to be important for their own regional products, too. After all, Japanese consumers are attuned to quality.



WIM BETTEN is General Director of CONO Cheesemakers.

'Quality is a total package'

CONO Cheesemakers prepare Beemster cheese with a PDO quality mark. According to managing director **Wim Betten**, this is an important way of supporting the excellent reputation of Dutch dairy at home and abroad. "You don't get a quality mark without good reason. Dutch dairy has an excellent reputation at home and abroad and quality marks such as PGI and PDO confirm the quality we deliver. We are closely monitored in this area. CONO Beemster cheese is exclusive and the PDO quality mark contributes to this. Consumers understand quality is assured and can taste this. Quality is about meeting criteria in the area of taste and consistency, but also about experience. The legacy of Dutch dairy production plays a role in this. Buyers can be confident they will get the same cheese from one month to the next and dairy producers know exactly what this cheese should taste like and how taste develops during ripening. Quality is a total package. Our savoury Beemster North Holland Gouda cheese has a PDO quality mark for a reason. Cows graze on North Holland's sea clay soil, which gets into the grass. You can taste this in sustainable North Holland meadow milk and, ultimately, in the cheese, too. We maintain quality by following procedures and adjusting them wherever necessary. Cheese making is a profession that has been practised in the Netherlands for centuries. To deliver exceptional quality, you need to do something extra at every step of the process. This is reflected in the way we deal with the grass and land, the cows, and the way in which we maintain traditional craftsmanship in our own unique way. We have fully internalised the required technical knowledge, from start to finish. We all need to deal with this very carefully, because it has brought us great confidence on the global market. A dairy product from the Netherlands always has an advantage".

‘With our dairy tradition, we contribute to global food supply.’

In the ‘Golden dairy triangle’, the Dutch government works closely with companies and knowledge institutes.

Guido Landheer discusses market access, international collaboration and sharing expertise to feed the world.



GUIDO LANDHEER is deputy director of General Agro International at the Ministry of Agriculture, Nature and Food Quality.

On trade missions, through agricultural councils at embassies and in joint projects, the Dutch private sector and the government work closely together on the development and presentation abroad of ‘their’ dairy products. This includes the Agriculture & Food sector, one of several designated ‘top sectors’ in which the Netherlands excels worldwide. Guido Landseer, Deputy Director-General Agro International at the Ministry of Agriculture, Nature and Food Quality reveals ‘the secret’ of the Dutch top sector’s ‘Golden triangle’: cooperation between government, industry and knowledge institutes. Working together they put a great deal of effort into innovations, such as dairy farming.

Dairy supply chain in pictures
Emiel Jansen is a milk tanker driver and Director of Germo Logistiek B.V.

Furthermore, human capital is regarded as essential. The government supports training programmes so that sufficient professionals are ready to work in the sector. Research, innovation, education and practical learning; everything is aimed towards development of a sustainable dairy chain.

International orientation

This strategy takes the Golden dairy triangle beyond a national focus, explains Landheer. “We look across borders. How do we present ourselves, where can we highlight our products and knowledge in a useful way, and with whom can we work together?” For example, international research is being done on, among other things, agricultural CO₂ emissions, in which the dairy sector also participates. In California, dozens of American and Dutch participants from universities and companies are involved. Together with Japan, the Netherlands is developing new robotic systems to process manure, feed cows and monitor their health. “In Kenya we are helping small farmers to grow fodder crops such as elephant grass. This is good cow feed and provides materials for, among other things, milk cartons”.

Side by side

Cooperation is part of Dutch farmers’ DNA. “When I was still director of Dutch Top Sectors at Economic Affairs, we re-

garded the agricultural sector with admiration. We saw long-term and intensive cooperation taking place there, especially in the dairy sector.” As a result, interested parties can find each other easily at home and abroad, which, according to Landheer, makes the Netherlands ‘very strong’ internationally. To support this position, the Dutch ministry of Agriculture, Nature and Food Quality has built up a network that includes 49 agricultural councils at embassies around the world, which is over a hundred years old. In this way, they establish contacts with local knowledge institutes, companies and governments. Market information is gathered and small-scale projects are initiated, involving scientists from Wageningen University and dairy producers, for example. Of course, each party also takes the initiative whenever they see an opportunity, Landheer adds. The Dutch government also provides market access if necessary. In many countries we face restrictions to market access. Intervention by agricultural attachés often ensures the situation doesn’t worsen. “I was in South Africa, which wouldn’t allow Dutch poultry to enter the country. Bilateral talks with the South African government managed to get us back on track.”

On a mission

Landheer travelled with a dairy delegation on a state visit to Indonesia by King Willem-Alexander and Queen Máxima. Exclusive trade missions are undertaken for dairy, but the sector is also involved in other trade missions. Such as Dutch Prime Minister Rutte’s trip to Nigeria at the end of last year. “It’s a wonderful way for small and medium-sized businesses to get to know a country and find out more about it, in order to build up a network.” Having a minister or other prominent person on site can open doors for companies. According to Landheer, it’s not about contracts, but about contacts. Network meetings, seminars and matchmaking afternoons

‘Being able to feed the population well is crucial to a society. The Netherlands has the expertise to play a role in this.’

bring parties together. If a contract is already on the cards, the presence of a politician or king on a trade mission can be an incentive for a festive signing ceremony. These trade mission results are measured. “In the long run, they always produce contracts.” FrieslandCampina signed a cooperation agreement in the presence of Prime Minister Mark Rutte and Nigerian President Muhamma Buhari. The company will be helping Nigerian farmers increase their milk production and improve its quality. Together with companies and knowledge institutions, the Dutch government is also present at international trade fairs, such as the annual ‘Grüne Woche’ in Berlin. At this famous agricultural and food fair, they jointly promote dairy products in the Holland Pavilion. Frau Antje, the Netherlands’ cheese ambassador for Germany in traditional Dutch costume, is always a huge success.

Quality and knowledge

Quality is decisive, because that is what we are internationally renowned for, says Landheer. This reputation has led to a growth in knowledge exports in recent years. “Our expertise in cheese, butter, milk powder, machines, cattle feed, manure processing and dairy cattle is highly valuable. Among other things, we support China with programmes to improve local livestock. This basically deals with running a farm sustainably, with specific types of

cow. We excel at that. This approach has its roots in our tradition of cooperation. In the Netherlands, everything starts with working together to ensure we have the very best products. In addition, we develop knowledge together with foreign parties.

Reducing hunger

Landheer and his colleagues support the dairy sector, even in the current corona crisis with borders closing around the world. Europe is now given extra attention. “We are investigating adjustments in the dairy sector and the first question is whether globalisation will continue. We expect trade with neighbouring countries will grow, but it will never be entirely local or regional”. Landheer refers to the international goal of reducing global hunger. This is a priority among the United Nations’ Sustainable Development Goals. According to Landheer, the coronavirus crisis will also bring an economic downturn causing unemployment, poverty and ultimately hunger, especially in developing countries.

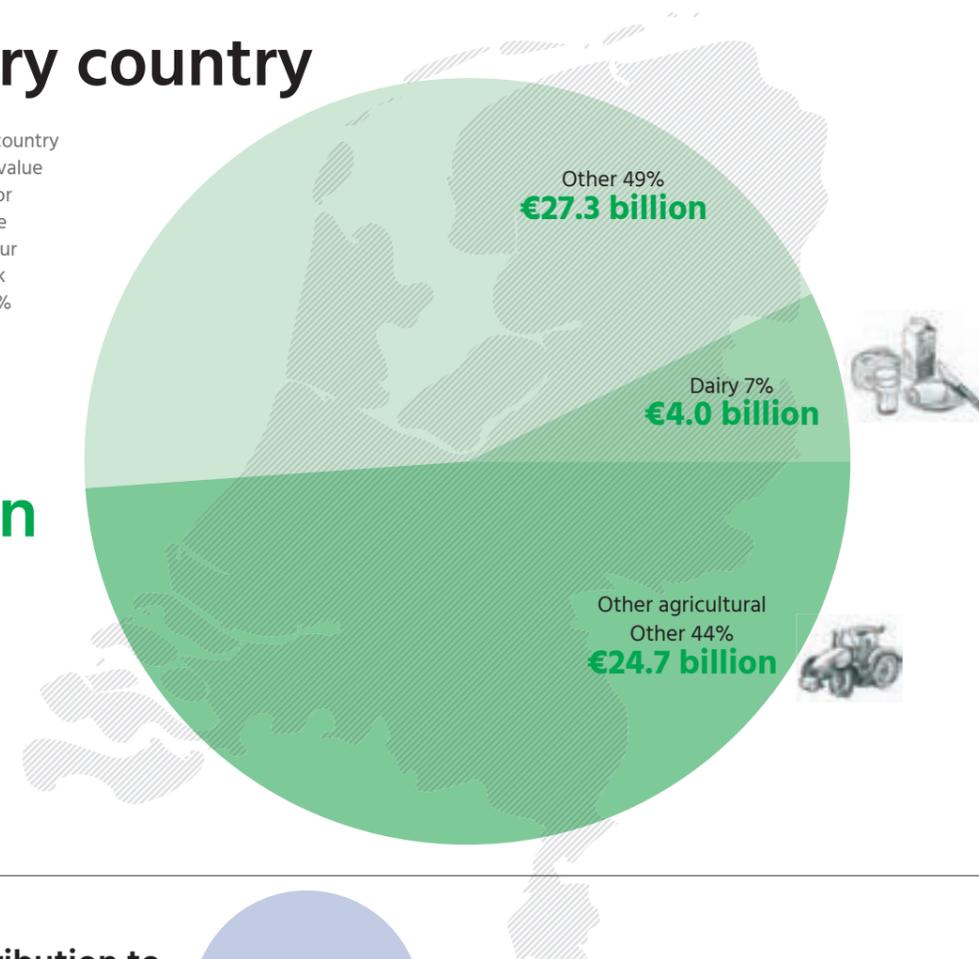
More than money

“Being able to feed the population well is crucial to a society. The Netherlands has the expertise to play a key role in this. We know how to handle raw materials efficiently. Consider our long-term dairy programmes in Nigeria aimed at food security. We don’t sell our milk and then just disappear. It’s about more than money. You can see this in all the projects in which we work together to realise a wonderful goal, such as local stable systems. We have a social responsibility towards those countries.” Close cooperation between government, industry and knowledge institutes doesn’t only benefit the export of Dutch dairy products. “Through our dairy tradition on the one hand and the creative use of knowledge on the other hand, we contribute to the food supply worldwide. ■

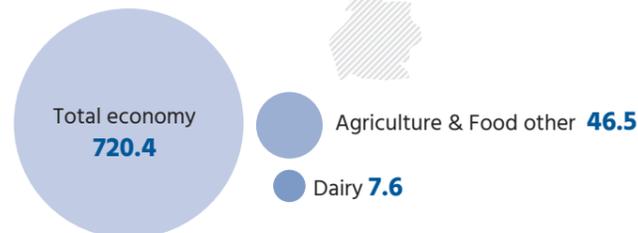
A real dairy country

The Netherlands is an important country for dairy exports. With an export value of 7.6 billion euros, the dairy sector contributes 7% to the Dutch trade surplus. This comes mainly from our neighbouring countries. Of all milk processed in the Netherlands, 80% remains in Europe.

Trade surplus Netherlands 2019
€56 billion

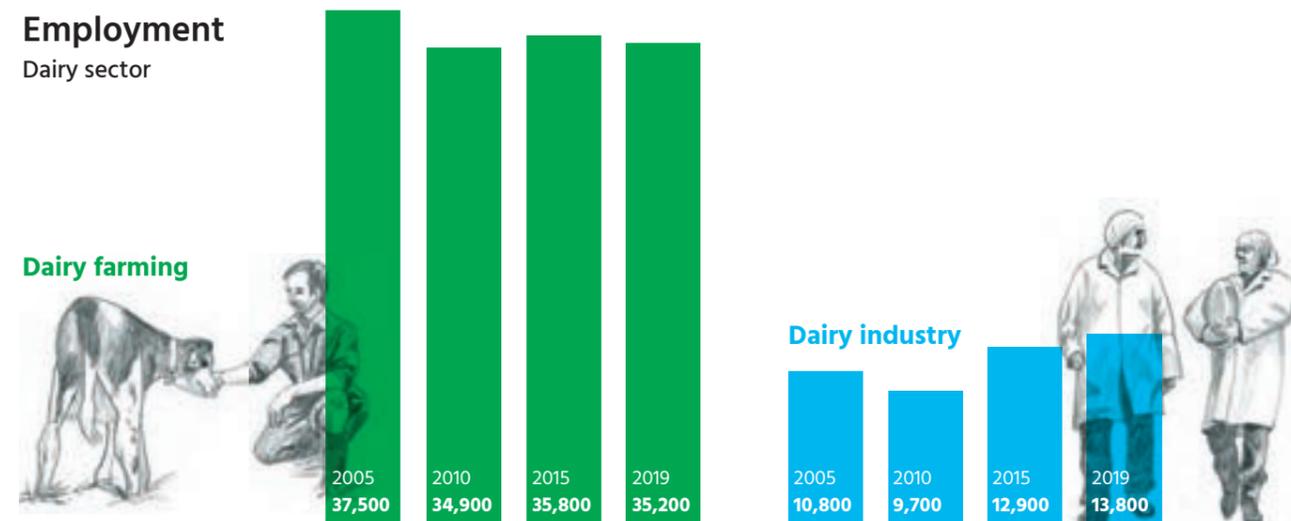


Contribution to Dutch economy 2018
(in billions of euros)



Source: ZuivelNL, Wageningen Economic Research

Employment Dairy sector



Source: Eurostat, Wageningen Economic Research

Sustainability in the dairy industry is increasingly regarded as a quality standard for Dutch dairy products. In fact, large international food industry and retail companies are increasingly basing their purchasing policies on this.

Demonstrable sustainability sells itself

Sustainability is a broad concept. If you want to make a product sustainable, you first need to define sustainability. What do we mean by sustainable dairy in the Netherlands? What do governments and dairy buyers understand by this? How do Dutch sustainability criteria compare with those of export countries? In Western Europe or Russia, different sustainability requirements apply than in South America or China. In some countries, the emphasis is on animal health and well being, in other countries, there may be a stronger focus on biodiversity or CO₂ emissions.

Proactive policy

With the above in mind, the Dutch dairy sector carefully listens to the expectations of society, customers and government at home and abroad, and tries to meet these expectations. This makes it possible to anticipate legislation with proactive policies. A good example of responding to the wishes of society is meadow grazing. When the number of cows at pasture dropped around 2010, this caused some commotion in the Netherlands. The cow is characteristic to the landscape and for the Dutch, seeing cows in meadows is important. For this reason, the dairy sector decided to stimulate outdoor grazing by offering coaching, knowledge and

financial incentives to dairy farmers, and by marketing dairy products from cows grazing outdoors. This was a huge success. Since 2018, the number of dairy farms with outdoor grazing has exceeded the 81.2% desired level set in 2012. Consumers can now choose their own outdoor grazing milk products. The Netherlands played a pioneering role in this area. In the meantime, buyers in other countries are also demanding outdoor grazing.

Outdoor grazing in the Netherlands is back at the desired level of 81.2%

The Sustainable Dairy Chain

In the Netherlands, the Sustainable Dairy Chain (Duurzame Zuivelketen, DZK) plays a central role in realising structural and demonstrable sustainability throughout the entire dairy chain. The DZK is a partnership between dairy farmers and dairy companies. It works in consultation with farmers' organisations, government, science and education, and social, nature and environmental organizations. The Sustainable

Dairy Chain is coordinated and financed by ZuivelNL, the Dutch dairy sector chain organisation. Dairy companies and dairy farmers work within the DZK on a number of key themes in line with jointly formulated objectives: climate-responsible dairy production, continuous improvement of animal health and welfare, conservation of outdoor grazing, biodiversity and the environment. For Dutch consumers as well as the government, these are the main themes within the dairy sector in relation to working towards a more sustainable world.

Monitoring

Each year, experts from Wageningen Economic Research report on progress made in achieving the Sustainable Dairy Chain goals. Several targets have been achieved for 2019, for example in the field of energy efficiency, responsible soy (100%), outdoor grazing and responsible use of antibiotics in dairy farming. Regarding the use of antibiotics, more than 99% of antibiotics usage in Dutch dairy farming is compliant with the action values of the independent Veterinary Medicines Authority (Autoriteit Diergeneesmiddelen SDa). The sector is praised for achieving this objective and further reducing the use of antibiotics. Proactive policies ensure the sector anticipates Dutch legislation. Appreciation for

achieving of sustainability targets is important for retaining support and motivation of dairy farmers to work on ongoing sustainability. In addition, the dairy sector has shown itself to be a reliable partner, which is vital for future cooperation. New sustainability goals have been set for 2030, including three new themes: dairy farm business models, land-based dairy farming and farm safety.

Making sustainability demonstrable

Demonstrable improvements in the area of sustainability are very important to the Dutch dairy sector, also with regard to international trade. The Netherlands are leading the way in many sustainability developments. For dairy companies, being able to demonstrate this to international customers is essential. This requires an unambiguous methodology that can be used by sellers as well as buyers. In 2013, the Global Dairy Platform presented its DSF (Dairy Sustainability Framework) to stimulate the sustainability of dairy products worldwide and develop a methodology that shows steps towards sustainability.

Greater efficiency

For customers, however, DSF was too non-committal and too general. Therefore, dairy companies and buyers asked DSF to develop a demonstrable sustainability methodology at individual company level. For dairy buyers, an unambiguous methodology for sustainability criteria is important in communication with consumer. It's also efficient; they can jointly carry out local audits according to an agreed methodology, instead of relying on many different parties. To develop this methodology, the DSF approached SAI (Sustainable Agriculture Initiative Platform), a food industry organisation that supports development of sustainable agriculture, which has representation in dairy companies and large international dairy customers such as Nestlé, Danone, Unilever and Mars. SAI developed the Sustainable Dairy Partnership (SDP) an international sustainability methodology for the dairy

sector. This methodology is based on a matrix incorporating five management system maturity levels and a tool that allows dairy producers and buyers to exchange required data. This allows processors of dairy products to record and demonstrate their SAI sustainability level of maturity.

Future-proof

Thanks to the commitment and performance of the Sustainable Dairy Chain, the Dutch dairy farming and dairy industry is well on the way to making dairy products

and processes more sustainable. In many areas, the Netherlands is ahead of other dairy producing countries. There is still room for improvement on a number of themes. There is no doubt that sustainability never ends. Recording, monitoring, measuring and improving forms the basis for future-proof sustainability in dairy products. Good cooperation between dairy farmers and dairy companies is essential to guaranteeing the sustainability of Dutch dairy, improving this and, above all, ensuring transparency. ■

How does the Sustainable Dairy Partnership work?

The power of the system is the unambiguity of data between dairy purchasers and their suppliers. Dairy producers and their supplying dairy farmers can improve their sustainability score step by step, based on five maturity levels:

1. Participation in the programme
2. Prioritisation of 11 formulated themes (KPIs)
3. Formulating objectives and acting accordingly
4. Constantly improving sustainability and reporting on this
5. Achieving results and inspiring others with these

Each of the five maturity levels includes a significant number of criteria that can be used to demonstrate that sustainability is adequately implemented in a dairy processor's management system. This includes a sustainable approach among the dairy farmers from whom processors buy their sup-

plies. Dairy companies that commit to the Sustainable Dairy Partnership make their own choices regarding what is most important for their specific situation, in order to achieve sustainable sustainability gains. They do this based on 11 themes:

1. Greenhouse gas emissions
2. Fertilization
3. Waste streams
4. Water usage
5. Land usage
6. Biodiversity
7. Market development
8. Contribution to the local economy
9. Working conditions
10. Product quality and safety
11. Animal health and welfare

In a one-page report, dairy product buyers can easily and quickly find out about suppliers' progress, based on the starting values.



‘We know exactly what we want and what we are capable of’



The Dutch dairy sector is characterised by high levels of cooperation and rapid action. This results in a bundling of process and product development expertise. Wageningen University plays a central role in this.

THOM HUPPERTZ is Professor of Dairy Science & Technology at Wageningen University & Research (WUR) and works as Principal Scientist Food Structuring at FrieslandCampina.

Dairy chain in pictures
Jeroen van Binsbergen is Research Analyst Dairy Physics & Chemistry at FrieslandCampina in Wageningen.

“Anyone can produce, but you need to be faster, better and more efficient.” And there’s more, according to Thom Huppertz, Professor Dairy Science & Technology. “You also need to stay at the forefront by placing products on the market that others aren’t offering or don’t have yet.” The Dutch dairy industry operates according to this method. Innovation is crucial to this, says Huppertz. “You need to have a great understanding of the basic raw material - milk - as well as processing, and you need to discover

what else you can do. It’s also important to know what retailers and consumers require. You need to know the market through and through.

Differences in taste
Although the Dutch consume vast quantities of dairy, the growth markets are across the border. “The Netherlands is quite saturated, but Asia and Africa are on the rise. However, people there aren’t interested in nice, extra-matured Gouda cheese. In Asia, people don’t think about ▶

cheese as something you would put on a sandwich, but they do melt cheese and use it in pastas and on pizzas. In traditional dishes, they also melt cheeses that don't taste too strong. This is something to be aware of. What do people need and how can we provide it?" Chocolate milk is very popular right now, especially in European countries. "Traditionally, this is a good product that everyone enjoys. You can find it everywhere, but here quality turns out to be important. The taste has to match consumers' profiles and wishes. That means paying close attention to what they consume." For example, the Dutch are used to fresh, pasteurised milk and sterilized milk is less popular, says Huppertz. But in countries that traditionally don't consume much dairy, people generally don't like pasteurized milk. "They often import sterilized milk. New products need to match the flavours

people are familiar with. To deviate from this would be taking a big risk."

Vanguard

The Netherlands has been at the forefront of dairy research for over a hundred years. This has provided a foundation on which the Dutch are still building, according to Huppertz. "This is reflected in every product. You can't quickly put together something completely new. Our cheese has been more and more extensively developed over the years. That has resulted in many variations. Take milk foam, for example. We were already working on this over eighty years ago, working on limiting foaming processes. Now, we can use that knowledge to make the best cappuccino foam." Buttermilk, produced in the making of butter, is another example. Forty years ago, in the traditional butter-making process, this acidic process



12,819

is the number of students (BSc, MSc and PhDs) at Wageningen University & Research in the academic year 2019/2020. Of these, 2,889 were international students.



MILK PROTEIN:

Milk, a source of high quality protein, is the basis for developing high quality ingredients used in nutritional products. A great deal of innovative research - also carried out in Wageningen - is aimed at making milk proteins suitable for this type of processing. As a result, the field of milk protein applications is becoming wider and more complex. In addition to traditional applications, milk protein is used in, for example, baby milk powder, medical nutrition - such as drinking and tube feeding - and sports nutrition, such as protein bars.

was not well suited for further processing. "The issue was with the butter making. The process in itself was fine and resulted in good butter. But the buttermilk by-product was mainly used as animal feed and hardly used for human consumption. Until research led to a new preparation process, in which the buttermilk did not sour. This is still used worldwide as a standard component of butter making. Just like the buttermilk itself, which is now a valuable ingredient." WUR and NIZO Food Research played a prominent role in this development of knowledge.

'We constantly upgrade the chain by finding new and better applications.'

Collaboration

Huppertz is particularly positive about our country's knowledge infrastructure, in which a variety of universities and research institutes work together. "A sector populated exclusively by dairy technologists won't do well. We need experts in other areas too, such as process design, food safety and marketing. It's precisely that combination which helps us move forward." Knowledge of human nutrition is an important area, for instance, since dairy should be part of a healthy diet. The same goes for the development of equipment such as milking machines on the farm and in the factory. Sometimes, technology from another industry is adopted. "Integration of this knowledge makes the Netherlands an important country for dairy." To this end, research institutes, universities and the business community work closely together and coordinate rapidly. "In this way, we remain at the forefront and are

attractive to employees who want to do high-level research. If everyone does his or her own thing, this results in lots of separate islands ". Huppertz estimates that half of the research carried out on the university campus is initiated by foreign customers. "They know they will get what they need here." The FrieslandCampina Innovation Centre and Unilever Foods Innovation Centre are also located on the site. Both work on fundamental research, sometimes jointly. The government stimulates this type of cooperation with subsidies, Huppertz explains. A Chinese dairy company has also settled on the campus. "The fact that they chose this exact spot says a lot about its added value."

Other applications

Milk, yoghurt and cheese have always been the basic products, but there's more to dairy. Besides cheese, the cheese making process also produces whey. Many protein ingredients are made from this. These are used in sports and medical nutrition, among other things. Lactose is used in pharmaceutical applications, such as pill-making. "We are constantly upgrading the chain by finding new and better applications. Milk, butter, cheese and milk powder will always remain key within the dairy sector. High quality ingredients for specific purposes are an addition to this". For example, interest in food targeted at the elderly is growing. As people get older, they need more protein. "How can we develop products that meet an individual's needs? Such as medical nutrition for people requiring food to help them recover after surgery. They need protein and other nutrients. We're looking for a form of food that meets those needs, and which they can easily consume." The Netherlands is the world's largest exporter of food for infants. A great deal is happening in that area, says Huppertz. "This food is intended for a very vulnerable target group, small babies, so everything has to be exactly right. Ideally, this food is functional, safe and easy to process. What are the

best ingredients and the best proteins to meet those demands?" We also look at the process. Is it safe, are there any harmful bacteria involved? "On the other hand, you don't want to work so intensively that you lose nutrients. That means developing a single product together with research from other disciplines. The Netherlands really add value to this." According to Huppertz, research should always be based on a combination of knowledge, for example technical and marketing knowledge. "A great product that no one wants won't sell. The same goes for products that are in demand, but ultimately disappoint. It's always an and-and situation."

Going the whole way

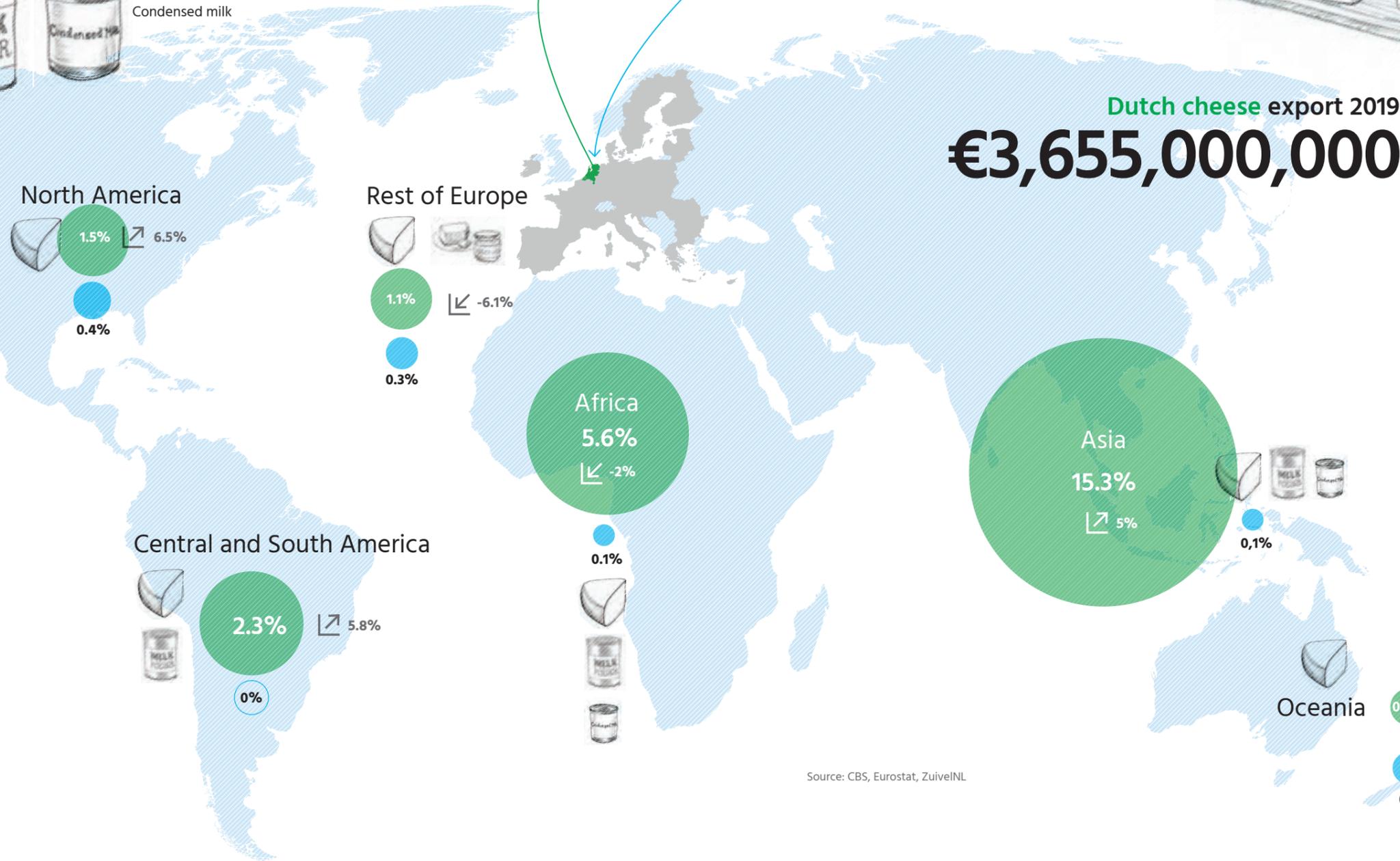
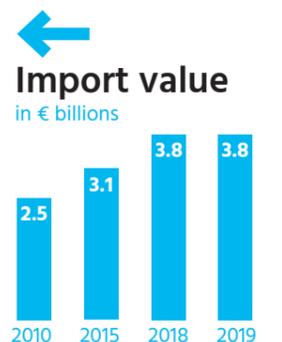
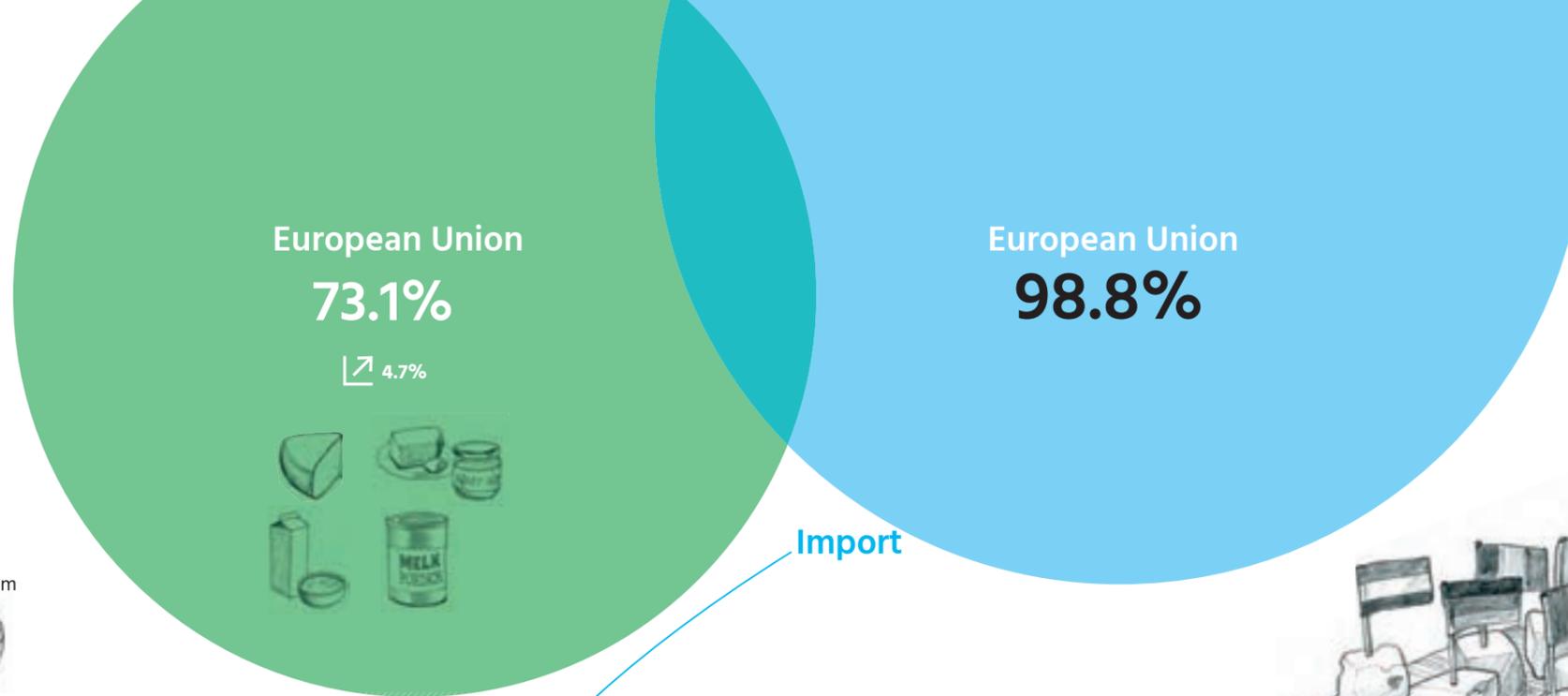
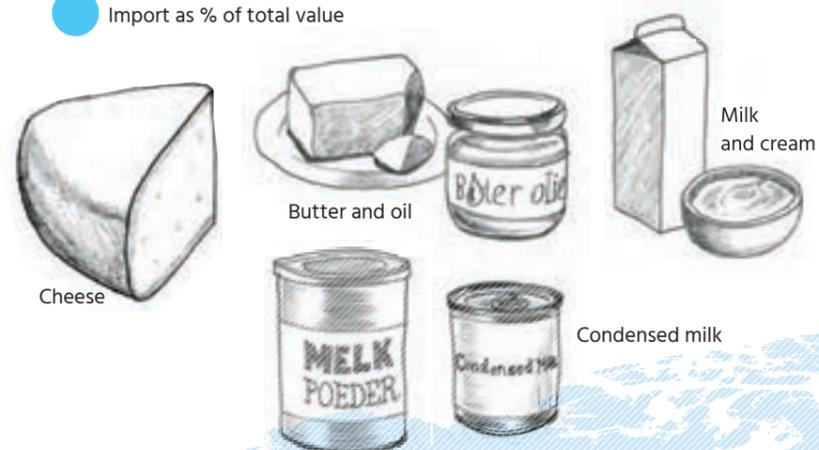
Huppertz explains that behind all innovative companies worldwide there is a chain of other companies. "As a dairy company, you have a choice. Do you want to be an innovator and lead the market? Or would you rather process efficiently and adapt rapidly to developments and shifts in the field?" The Netherlands chose to innovate and is still leading the way. "The beauty of what we're doing here lies in the fact that we look at many different areas, but together we have the ability to quickly determine whether a topic will become relevant or not. We really keep pushing ahead. We also avoid getting slowed down by years of research, only to find out that something is interesting but not really important. We know very well what we want and what we're capable of, here at Wageningen University and other academic institutions, research institutes and companies. We bring all expertise in process and product development together. That is the Netherlands' great strength. —

Export and import

Dairy products to and from the Netherlands
2019, growth rates 2010-2019

Legend

- Exports as % of total value
- Imports as % of total value
- Growth
- Decrease



Dutch cheese export 2019
€3,655,000,000

Top destinations
(value in billions of euros)

1	Germany	1,197
2	Belgium	476
3	France	373
4	Spain	224
5	Italy	131
6	United Kingdom*	121
7	Greece	120
8	Sweden	113
9	Japan	98
10	United States	82
	Other countries	721

Source: CBS, Eurostat, ZuivelNL



Dutch dairy owes its strong global market position to its high, consistent quality and innovative capacity.

‘We don’t discuss quality with customers, people just know it’s good’



ALBERT DE GROOT is CEO of Vreugdenhil Dairy Foods, a company that produces milk powders from fresh cow’s milk. He is also vice-chairman of the Dutch Dairy Organisation.

Dairy chain in pictures
Manus Mous is inspector at Royal A-ware.

A large proportion of Dutch dairy products is exported as milk powder. Important reasons for this are long shelf life, high nutritional value and guaranteed food safety. “Around the world, our dairy is synonymous with quality”, says Albert de Groot, CEO of Vreugdenhil Dairy Foods. “Wherever I go, I don’t need to elaborate on the quality of Dutch dairy. People just know it’s good, because over the years we’ve built up a rock-solid reputation. Quality starts with the health of our cows and the craftsmanship of Dutch dairy farmers. Throughout the year, milk is collected and processed directly from the land. Because of this, and owing to the position of the Netherlands as an export country, we can deliver fresh produce very quickly. Quality is also guaranteed because we have excellent pastures and favourable climatic conditions. Dutch cows feel most comfortable at between 18 and 20 °C, if the temperature becomes too high, cows may suffer from heat stress. If it gets too hot in the summer,

our cows can seek out the shade of the barn. For this reason, you might ask whether keeping Dutch cows in countries with a much warmer climate is a good idea. Small-scale production is possible, but it is better and more sustainable to produce milk efficiently in the Netherlands under ideal conditions and to export high quality dairy products. This makes a better contribution to local food supply.”

Innovation and organisation

According to De Groot, the high degree of innovation and organization is another important factor in the success of Dutch dairy. “Knowledge institutions, government and the business community work together in the best possible way in our country. It’s no coincidence that Wageningen University & Research is regarded as one of the world’s top agricultural universities. At Vreugdenhil, we work on innovation and renewal together with various training and research institutes at ▶

home and abroad. Besides Wageningen University, these include the Van Hall Institute, Aeres Hogeschool Dronten, HAS Hogeschool Den Bosch, NIZO and TNO. We offer internships and work together on product improvement, refinement and quality. Shelf life is crucial in, for example, African countries. Our tinned milk powder has a two-year unrefrigerated shelf life. The nutritional components must remain constant and the powders must be easily soluble. This is the result of joint research. Important, because we are increasingly providing milk powder as an ingredient for early life nutrition and for specialised dairy nutrition for the elderly, or people with specific nutritional needs. Besides innovation, we also have a government that constantly ensures rapid and adequate regulation. This contributes to conditions that are ideal for keeping the Dutch dairy industry at the forefront of innovation, food safety and product development. The importance of this strong market position is huge. Together, the Netherlands exports 7.8 billion euros worth of dairy products, which equals 7% of the national trade surplus. This is not only a vast economic interest - we have also taken on the task of providing a large proportion of the world's population with good, healthy and safe food."

Affordable premium product

This brings De Groot to another dairy innovation focus area: sustainability. He considers it a moral obligation for the Dutch dairy industry to take on responsibility in this area. An important aspect of sustainability is corporate social responsibility. "That makes perfect sense, if you consider the fact that we are contributing to healthy diets of a large part of the world's population, such as in Africa, an important market for us. Areas like this often face great poverty and food shortages. As a result, we need to supply a premium product on the one hand, the quality and safety of which should never be questionable, but at the same time this product must remain affordable for those on the lowest incomes. Vreugdenhil

Dairy Foods exports 750 million euros worth of milk powder to countries outside of Europe each year, 75% of which goes to countries outside Europe. Our milk powder is at the top of the market in terms of quality, but we also want it to provide nutrition for the poorest people. This is why, for example, we also supply our milk powder in small packages, such as the Unit Portion Packs. These usually find their way to consumers through small stores and street sellers. As a result, someone who might not be able to afford a kilogram of milk powder, for example, can still obtain a regular supply of protein, minerals and vitamins".

Sustainability in the chain

When it comes to caring for the environment and climate, De Groot believes that the Dutch dairy industry sets itself apart from other countries. "In the Netherlands, we are working on making the entire chain more sustainable. That starts with dairy farmers and moves through the entire process of production, storage, transport and distribution. At Vreugdenhil, for example, we work with a points and premium system stimulating farmers to produce milk sustainably. This is working very well, not least because dairy farmers are used to thinking ahead, to keep their farms running at their best. How do they deal with cattle, pasture, grass crops, supplementary feed, stables and energy? Various programmes have been developed to achieve optimum sustainability together and farmers are investing in this. We are entering into partnerships with them, and also doing this with other parties in the chain, such as the packaging industry and the transport sector.

The Dutch dairy industry makes use of highly efficient and environmentally friendly production techniques and methods, but also relies on sustainable transport. At Vreugdenhil, milk cans are 100% recyclable and our milk powder is shipped from Gorinchem to the port of Rotterdam over waterways. Compared to road transport, this saves 50% on CO₂

emissions and also offers an economic benefit. We don't encounter traffic jams, the costs are lower and we are also given priority in the port".

Drinking water projects

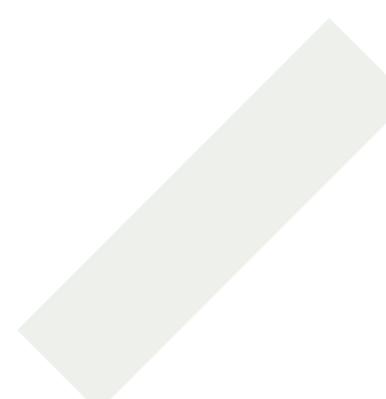
For the future, De Groot sees another task for innovation in dairy, especially in African countries where milk powder is purchased. Globally, there is a major shortage of clean drinking water. De Groot: "Milk powder might be of the highest quality, but if you have to dissolve it in dirty or contaminated water, you still have a problem. That's why many people in Africa consume milk powder dry, for lack of clean water. The percentage of solids in milk is 13%. We have set ourselves the target of ensuring the 87% water we remove from milk can be pumped up from the soil in Africa. Vreugdenhil wants to further develop such drinking water projects in cooperation with NGOs and charitable organisations. The goal is for the countries in question to eventually be able to set up a good drinking water supply themselves. —

THE NETHERLANDS produces 2% of the world's milk and is Europe's largest producer of full fat cow's milk with a production of 178,000 tonnes. The Netherlands is also an important transit country for milk powder, which means Dutch milk powder exports exceed domestic production.

NEW ZEALAND is the world's largest exporter of whole milk powder with a production of 1,420,000 tons of whole milk powder. This is four times the EU production.

Dairy knowledge as an export product

The Dutch dairy sector is largely based on high-quality knowledge that has been built up over the years. The government uses this leading knowledge position to promote Dutch products. Dairy knowledge has become an export product in its own right.



The Ministry of Agriculture, Nature and Food Quality (LNV) works to promote Dutch knowledge, expertise and quality in agriculture worldwide. The Ministry supports initiatives to export this knowledge. For example, the Netherlands is positioned as a guide to sustainable agricultural production and as a country that produces high-quality products. In this way, the ministry supports the export of Dutch agricultural produce.

Agricultural promotion

Every day, a worldwide network of agricultural attachés and civil servants works from The Hague to achieve these goals, organising incoming and outgoing trade missions, agricultural working groups (with representatives of foreign agricultural ministries) and agricultural trade fairs, for example. They do this in

cooperation with knowledge institutes, public sector parties and agricultural companies that want to export products. As many as forty World Days are held at Dutch embassies each year. On these days, an embassy presents the Netherlands to its guests as a knowledge leader in the development of agriculture and high quality food products. Furthermore, Dutch agriculture - and therefore also dairy - is represented at the International 'Grüne Woche' in Berlin, an event that takes place each year in January. Dutch agricultural and dairy companies are well represented at the world's largest agricultural fair with a 1,500 m² Holland Pavilion. It's a logical decision for the Netherlands to profile itself at this event, considering the fact that 80% of Dutch agricultural exports - some 85 billion euros - are shipped ▶

to Europe. A quarter of this, 22 to 23 billion euros, is intended for the German market. The fair attracts 400,000 visitors each year (mainly consumers), but it is also provides a platform for some 70 agricultural ministers from all over the world.

Opening doors

The Ministry of Agriculture, Nature and Food Quality (LNV), Dutch agricultural companies, and education and knowledge centres, can also access markets outside of Europe, by organising trade missions for example. Depending on the country and its importance for Dutch agricultural companies and institutions, dignitaries such as ministers and members of the royal family might join the travel party. A mission such as this can focus on a specific target group, but

might also have a very broad scope. In the latter case, the focus is on Dutch agriculture in the broadest sense, according to the Farm to Fork strategy. The European Commission strategy document 'Farm to Fork' aims to make food systems fair, healthy and environmentally friendly. During the mission, everything the Netherlands has to offer in the field of agriculture, for the entire chain, is discussed: from the construction and interior of stables and the export of heifers, to food and education and agricultural training.

Learning from the Netherlands

Dutch farms and their produce are promoted during trade missions, but the countries visited also get a clear picture of the high quality standards of our agriculture. This regularly leads to a

foreign government asking the Dutch to share their knowledge with them. The ministry regularly acts on these requests. The Dutch government considers it important to share knowledge, because in this way the Dutch way of working - given local demand - is copied as effectively as possible. Standards set in this way facilitate and stimulate trade. Requests for knowledge from outside the country can be met with seminars on site or - in the current Covid-19 era - with webinars. Countries often also want to visit farms and knowledge centres in the Netherlands. In this way, foreign governments, as well as representatives of companies and knowledge institutions, become acquainted with the Netherlands and experience how the country deals with standards in areas such as quality,

sustainability, food safety, cattle feed, training farmers, information, stables, milk robots, certification and organizational structure. This applies to the dairy sector in particular, which shows foreign parties that the Dutch dairy industry and dairy producers have spent many years working to achieve this level of quality and investing heavily in it.

Contacts are also being made by foreign governments to establish cooperation, for example to offer training positions at Wageningen University. The ministry considers this important, because foreign students return to their own country as 'ambassadors of the Netherlands'.

New earnings model

A current trend is the fact that more and more countries want to become

self-sufficient and capable of providing their population with sufficient food. The Netherlands is often approached as a source of knowledge on how to achieve this. The question arises as to whether this trend will eventually change the earnings model of the Dutch dairy industry.

On the one hand, other nations' self-sufficiency may lead to a reduced purchase of dairy products, yet on the other hand, the Dutch dairy sector will be able to export its high-quality knowledge. In many markets - not only in developing countries - there is a great need for knowledge about responsible land use, animal feed, hygiene, food safety, good barns, energy systems, sustainability and other technologies. The level of knowledge of farmers and their co-workers can also be

improved with targeted training and guidance. They see how well we are doing in the Netherlands and how high milk production is, but often do not know how to realise this in their own country. Support for this could include setting up knowledge centres and demonstration farms. The Netherlands already exports high-quality dairy products and dairy cattle, but the market for associated knowledge is vast and open wide. ■

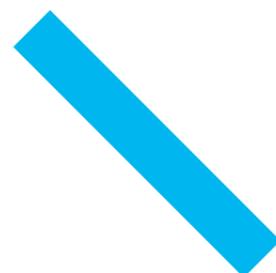


'We secure knowledge transfer by training local trainers'

HENK BLES is the founder and owner of Bles Dairies.

"The dairy farm is at the heart of everything we do. We convey dairy knowledge that we have been building up in the Netherlands for over more than a hundred years. We do this in the Netherlands and abroad, based on food security and safety. More and more countries want to take care of their own food production. Nowadays, everyone in Africa and

Asia owns 4G smartphones: they can see what we are capable of in the field of dairy. In order to transfer that knowledge, Bles Dairies works together with Dutch dairy producers and the Dutch government in line with the FDOV programme (Facility for Sustainable Enterprise and Food Security). We teach farmers to not only produce more and better milk, but also to guarantee volume, quality and safety. We stimulate this by paying local farmers, in cooperation with the local dairy, a higher price for milk if they meet set quality requirements, including sustainable dairy farming. Breeding and cattle improvement programmes, prevention and management of animal diseases and the quality of cattle feed are part of the training. We guarantee knowledge transfer by training the local trainers and educators, who in turn train local farmers and suppliers to use the knowledge. Our new knowledge company Triple Dairy, a collaboration with Wageningen University and Aeres University of Applied Sciences, is located on the Dairy Campus in Leeuwarden. Triple Dairy offers so-called 'Blended Learning' programmes: digital knowledge modules combined with classroom and practical on-site training."

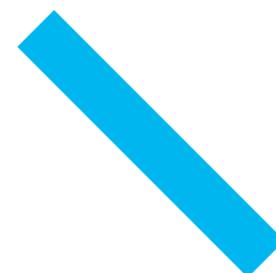


'Our cows produce data'

KEES DE KONING is manager of Dairy Campus, a dairy farming innovation and research centre.

"Considering the fact that more than 10,000 people visit our Dairy Campus each year, it seems very quiet now, during the corona crisis. Dairy Campus is the research, knowledge and innovation centre for the dairy farming industry. You can't research and innovate all on your own. The success of our working method is the network of all partners involved in our activities.

These include various educational and research institutes, as well as the Netherlands Agricultural and Horticultural Association (LTO), dairy companies such as FrieslandCampina, the municipality of Leeuwarden and the province of Friesland. We complement and strengthen each other, and our researchers, students and customers at home and abroad benefit from our knowledge and experience. We are constantly working on the demands of the day after tomorrow. This could concern methane, nitrogen, ammonia or animal welfare and health. All aspects of dairy farming are addressed at our innovation and research centre. With a herd of 550 dairy cows, 6 parlours and 300 hectares of land, the campus feels like an actual farm, which also happens to offer training and meeting facilities. Only in our case, milk is a by-product. We produce research data, knowledge, innovation, education and training. The beauty of this innovation and research centre is that we can test every research question and innovation in real life. We take on risks related to investing in, for example a new type of floor, smart sensors, additives, or animal feed, do the farmers don't need to. Dairy farming and the dairy industry benefit directly".



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Colophon

This publication was commissioned by Dutch Dairy Association (NZO). The publication is for informative purposes and is intended for general use. It is not meant to provide professional advice in any form. Figures used for the infographics have been provided by ZuivelNL. Numerous people from the dairy sector have contributed to this publication and we are very grateful for their enthusiasm and cooperation. If you require further information, please contact NZO on +31 (0)71 219 1700 or info@nzo.nl.

Concept and realisation: Axioma Communication, Baarn. www.axioma.nl

Baarn Photography portraits (colour): Vincent Boon

Printing: Printing Company Roelofs, Enschede

