KDV magazine

for the Sustainable Pork Value Chain

no. 01.

THEME: CLIMATE

Martin van 't Klooster:

'He's like a coach to me'

Healthy pigs thanks to daily manure removal

Better soil quality thanks to better manure

2022 KDV Annual Report

DUURZAAM VARKENSVLEES

Real solutions for real farmers

The Sustainable Pork Value Chain (KDV) advocates sustainable pig farming. We are a 100% Dutch chain, with more than 250 affiliated farms, meat processors, butchers and retailers. By sustainable we mean: continual improvements in animal welfare and the environment. This involves a comprehensive approach, which distinguishes us from single-issue initiatives. In pursuit of future-proof pig farming, we focus on 8 themes.

1 **Healthy pigs**
We apply extremely strict requirements for such aspects as antibiotic use, salmonella and findings when pigs are slaughtered.

2 **Care for mother and piglet**
Our piglets stay with their mothers for longer, and she is given nest-building material around the time the piglets are born.

3 **The animal's living environment**
Daily manure removal helps us improve the climate in the sty. Enrichment materials, such as lucerne, are provided in the sty.

4 **Minerals cycle**
We extract the minerals from the manure, return them to the cycle, and reduce mineral loss by improving utilisation by the animals.

5 **Biodiversity and soil**
We aim to minimise the amounts of copper and zinc in feed and reduce antibiotic use, so we disrupt soil life as little as possible by mitigating manure impact.

6 **Energy-neutral**
By implementing energy-saving measures, daily manure removal, immediate manure processing and digestate processing, we want to make the chain energy-neutral.

7 **Meat quality**
We produce high-quality food. The feed that participants give their pigs has to comply with the KDV raw materials list. All soy in the pig feed must be RTRS certified.

8 **Smart Farming**
Thanks to an innovative system of electronic ear tags, we have achieved the ultimate track and trace system. The piglets receive an ear tag with an RFID chip at birth. As a result, the entire history of each individual pig is known.

DUURZAAM VARKENSVLEES

This is a publication of the Sustainable Pork Value Chain Foundation
Editorial board: Jaap de Wit and Anne-Marie van Bussel - **Editors:** Christianne de Kort, Simone de Clercq - **Layout and design:** Kirsti Alink - **Photography:** Angela Buser, Renée van der Heide, Jens Haugen, Topigs (p. 3), Jeroen Bouman (p. 27) - **Production:** www.caplan.nl

It has been another turbulent year. The situation in Ukraine, extremely high energy prices, expensive pig feed, a political landslide in the Netherlands and the nitrogen issue that is playing an increasingly significant role: all these things have an impact on our lives and livelihood.

In a family, you're there for each other in good times and bad, always looking to the future. As a family business, Westfort works the same way – and following in its footsteps, so does the Sustainable Pork Value Chain (KDV). We look ahead and try to maintain a positive perspective together by means of innovations and new developments.

In the past year, we have invested in research on daily manure removal and on our CO_2 footprint, we moved forward in the field of smart farming, and we took part in a pilot for electronic ear tags. It is also worth noting that we have been conducting good talks with retailers to achieve a better shelf position for KDV products. Together with our members, we are working incredibly hard to ensure that this sector will retain its appeal for future generations.

This annual report of the Sustainable Pork Value Chain has been published in the form of the kick-off edition of a KDV magazine. We plan to publish new issues of the magazine several times a year. In these pages, we can read about each other, learn from each other, and engage in dialogue with everyone who wants or needs to know more about our beautiful farms.

The theme of this magazine is 'Climate'. This is because climate affects our activities in all sorts of ways, and because we can affect the climate through our actions and how we do things. The aim of the magazine is to offer tangible prospects for future action, especially for our affiliated members. We would also like to offer tips and tools for how to tell our story the right way – to show how much we are doing to promote sustainability, as a chain and as KDV, and how our efforts are making a difference.

We are proud to be taking so many steps forward together, and we hope to be able to continue this course alongside our members. Together, we ensure a fantastic sector that is future-proof and resilient, now and in the future.

Jaap de Wit Jr.
Chairman of the Sustainable Pork Value Chain Foundation

'In a family, you're there for each other in good times and bad, always looking to the future'

In the spotlight: **York pig in 2023**

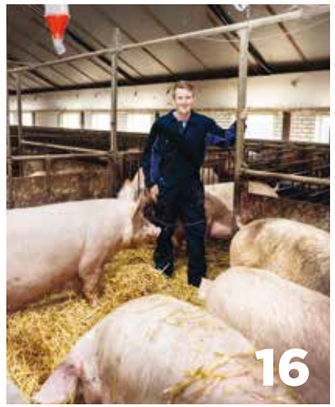
Twenty-five years ago, the market demanded different things than it requires today. The Piétrain breed was best suited to the requirements of our KDV customers. The breed has a high meat yield and delivers good returns.

FLAVOUR RESEARCH
KDV is always in development, always looking for new opportunities. Four years ago, extensive research was conducted in partnership with PIC and the CSO Flavour Research Centre in Wageningen to explore whether there were significant differences in flavour between different pig breeds. There were not.

PROGRESS
In recent years, huge progress has been made in the field of genetics. The sow lines have continued developing. Especially in view of the rise in TN70 sows, the necessity of using a Piétrain boar is less urgent. In actual fact, we see that crossing these sows with a York final boar results in meat pigs that are a good fit for our current KDV customers.

HEALTHY, STRONG PIGLETS
Electronic animal recognition shows that a York final boar yields healthy, strong piglets with great genetic growth potential. This final boar results in a robust piglet with substantially higher growth, reduced mortality during the rearing period, and good slaughter properties. In addition, the current York pig is a good fit for today's market demand. And that's why we are delighted to showcase the York pig in 2023.

03 Preface by **Jaap de Wit Jr**.
04 In the spotlight: the **Westfort York pig**
05 Interview with **Egbert Kruiswijk**
09 **Like father, like son:** Martin and Henk van 't Klooster
10 **Facts & Figures**
11 Interview with **Piet Lunenberg** about energy and waste products
14 From scraps to **high-quality protein source**
16 That's why I work at Westfort: **Arjan van der Heide**
17 Recipe for **pork tenderloin**
18 Research: **Daily manure removal** ensures healthy pigs
20 Interview with **René Klein**, Ministry of Agriculture
22 **Smart Farming:** new features in the MijnWestfort app
24 Better soil quality thanks to **better manure**
26 Less stress thanks to **smart ear tag**
28 **Annual report** of the Sustainable Pork Value Chain Foundation (KDV) June 2021-June 2022



‘Less stress thanks to smart ear tag’

>>

Enhancing the value of the Pigs

In the 1980s, Egbert Kruiswijk cycled across Loenen and the surrounding area to slaughter pigs and cattle on site for farmers. He processed the meat in a converted barn on his parents' farm. He now heads one of the world's most cutting-edge meat processors. Times change, and it's not a slow process. The trick is to keep taking the lead. This approach requires a clear vision, a solid dose of courage, and serious persistence. Egbert has it covered.

Egbert, what's your perspective on the future?
'The concept of trying to deliver everything for the lowest possible price is no longer feasible. The market is realising that things need to be done differently, but is still trying to figure out how to shape that change. Switch to organic farming? That ambition has been expressed by the government, but it is uncertain whether consumers are willing to pay that price tag. Over the past few years, we have talked extensively to retailers. They can also see that they will have to move towards products that are better for people, animals and the environment. I am very optimistic that we will be able to engage in a long-term partnership with the Superunie purchasing cooperative within the near future. If that partnership moves forward, we could offer good future prospects to the entire chain. And yes, a long-term partnership like that presents exciting new challenges, but we need the retail sector to be courageous, so we can show that there really is another way to do this.'

How can Westfort contribute to products that are better for people, animals and the environment?
'Right now, the KDV products are primarily supplied to wholesalers, who then resell them to butchers. About three-quarters of the pork you see in butcher shops comes from KDV farms. They can see that sustainable meat is higher quality. The main opportunities

‘We are doing what we can to combine market demand with idealistic principles’

for switching to better meat are in retail right now – but we do need long-term cooperation to make that happen. This approach enables us to pay an extra premium to farmers, so they can invest in moving closer to the example set by the 'Sty of the Future'. Our current certification process includes daily manure removal, which significantly reduces ammonia emissions and ensures better air quality for pigs, farmers, neighbours and nature. The Antibiotic-free Life Guarantee is another key feature of certification – and the main reason why our Italian customer wants to work with us. As far as I'm concerned, a five-week weaning period should also become a standard part of certification. Long-term partnerships offer security so we can keep developing. It goes both ways.'

Does that markup also reach the farmer?
Farmers that are currently participating in the KDV programme receive a premium for the Antibiotic-free Life Guarantee. We would also like to offer them a Sty of the Future premium that will help them fund further development – and that in turn has a favourable impact on the farmer's cost price. Good air quality and strong piglets already save farmers money by preventing extra expenses for veterinarians and antibiotics. With the extra premium, they can invest in manure processing on the farm, which leads to lower manure and energy costs. The bottom line: the farmer gets much more out of it. Besides the financial rewards and guaranteed sales, it also offers farmers a more pleasant working environment, which is better for their health.'

If you look back at where you started, what has been the biggest change for you since then?
'On the farm in Loenen, life was much simpler. I miss that sometimes, when I realise how complex the world has become. I used to be really proud of my profession. Now you have to watch your words. There's so much negativity in the news that it's almost impossible to overcome it. We established a company with the best of intentions, and we are doing what we can to combine market demand with idealistic principles. We need to get the market moving towards a sustainable choice. That is how we can offer perspective and security to farmers. I am convinced that we will make it happen.'

MARTIN AND HENK VAN 'T KLOOSTER

'Freedom and flexibility, being your own boss, and the option to structure your day however you like.' To Martin van 't Klooster (30), professional farming has all sorts of appealing elements. From early childhood, he wanted to be a farmer, just like his dad and his granddad, who started the farm in 1956. It was an obvious choice for Martin to continue on to farm school after graduation.

Since 2016, the family business has been the 'Van 't Klooster-De Vries' partnership and the chain of succession has been arranged. His father Henk (62) is currently still running the cow branch of the farm, which Martin's brother Richard (28) will eventually take over. Martin is responsible for the pig branch, while his mother Fetsje (60) offers support as needed. Father and son don't get in each other's way at all – quite the opposite. 'He's like a coach to me, making sure I don't dig myself into a hole. He said: "You won't really know all the ins and outs of the farm until you run it yourself. So you're going to do the pigs." We do still make the bigger decisions together, but we're usually on the same page anyway.'

Joining KDV was also a family decision. 'We were looking for a concept and considering the Better Life label when Westfort contacted us. They were looking for a new pig farm in the province of Friesland. All we had to do for Better Life was to build a sty for the weaning piglets and slightly reduce the number of pigs we had on the farm.' Martin works about ten to twelve hours a day. 'It's my hobby, so that's never hardship. I read up on anything and everything that might be better for our farm or for the animals.' New plans? 'The pig branch is fairly up-to-date for now. We are currently looking into a battery to store the energy from our solar panels. Another step towards sustainability.'

100% Dutch and 100% trusted

We are a **100% Dutch chain**. By now, about **250 family farms** all across the country are participating in our initiative. We visit all these farms every year to check their compliance with our strict criteria.

MINIMUM CO_2 FOOTPRINT
For the past **25 years**, since the early days of our chain, we have been compiling data on the impact of our pork. In **2022**, we commissioned the renowned and independent market research bureau Blonk Consultants to confirm our figures. The conclusion is clear: KDV pork has a favourable CO_2 footprint, especially compared to alternatives. And there are great opportunities for improvement in the future, too. As a result our pork will become one of the most sustainable sources of protein. (see p. 28)

45

Last year De Hoeve gave 45 tours.

There are **2500 solar panels** on the roof at the Westfort facility. (see p. 12)

4

In the slaughterhouse, we generate heat and energy from 4 litres of solid slaughterhouse waste per pig. (see p. 12)

95%

Farmers with a RFID read score higher than 95% three times in a row are eligible to take part in the pilot 'slaughter tag-free delivery' (see p. 26)

By building our new internal cold-storage and freezing warehouse, we cut down on about **75 lorries** a week, saving **600,000 km** a year.

188 farmers in the past **12 months** needed less than **2 minutes** to check the MijnWestfort app to see their own performance and compare it to the chain. (see p. 22)

Pigs in a daily manure removal system reach their target slaughter weight **9 days** earlier than pigs from a sty equipped with air scrubbers.
(see p. 18)

‘We want to **inspire others** to generate renewable energy too’

Piet Lunenburg, co-founder of Westfort

There is a great deal of uncertainty surrounding the energy prices, and it does not look like the situation will be resolved in the near future. Future-driven enterprise also means finding smart ways to do business and seeking self-sufficiency in terms of energy. That applies to the pig farms and the slaughterhouse. For example, during the construction of the new building, Westfort integrated innovative new energy methods that are now bearing fruit, Piet Lunenburg explains – despite retirement, he's still not ready to settle down and do nothing at all.

‘Similar to pig farms, our slaughterhouse also has large quantities of manure and solid slaughterhouse waste. And we wanted to do something with that,' says Piet Lunenburg, co-founder of Westfort. 'Our fermentor is similar to the one at De Hoeve, but much larger. Instead of manure from the sty, we use the solid slaughterhouse waste and waste products from the water purification plant. The basic principle of the fermentor has been around for a while, but we were the first to implement it at a slaughterhouse. By now, we even have an employee who has a full-time job monitoring and adjusting the fermentor. We frequently contact De Hoeve about it, because we have a lot to learn from each other. For example about how to control foaming. It's still very hands-on, but we hope to inspire other farms to start generating part of the energy they need.'

SELF-SUFFICIENT IN THE LONG RUN

'For us, it's not just about saving money. In fact, when you start out, you have to put a lot more money and energy into it than you get out of it. But it feels paradoxical for us to transport manure elsewhere when we can make a valorised product from it right here. Using the fermentor, we produce our own methane gas, converting manure into electricity, heat and digestate. We can currently meet about 20% of the slaughterhouse energy demand from the fermentor. By constantly improving fermentor performance, we eventually hope to boost this to 30%. Our main goal is to make sure that we can process the products that come from our own company. That saves so many transport kilometres. We also want to see if we can steadily reduce how much natural gas we use. It is currently mainly used for singeing and disinfecting. If alternatives for those steps become available, it should eventually be feasible to be completely self-sufficient in terms of gas supply.'

SOLAR-POWERED COLD STORAGE

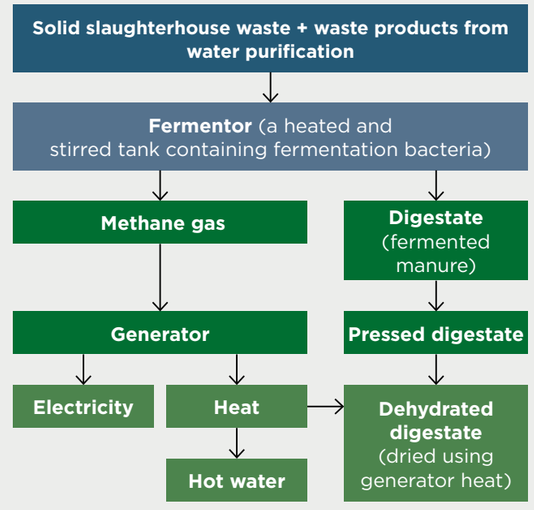
'Another example of working with what you have: solar power. That's why we installed 2500 solar panels on our roof during the construction of the new premises. The electricity we generate from those panels goes straight into our integrated cold-storage and freezing warehouse. We used to have refrigerated lorries driving off to external cold storage facilities, but now we can freeze everything on site and store it here. That cuts down on about 75 lorries a week, saving 600,000 km a year. That adds up to significant energy savings. Of course our cold storage also consumes a lot of energy. We can generate a small percentage of that (about 4%) ourselves from the solar panels and heat pumps. And if we're creative, we may just about be able to add some extra panels.'

SMART HEAT RECOVERY

'But we have even more smart solutions in place. Our heat recovery system from the cold storage facilities lets us warm up our offices and heat the water used to clean the slaughterhouse. We try to re-use everything we have, without any loss. Waste is a foreign concept here. The new facility was built to the highest standard of sustainability: BREEAM Excellent. For that reason and more, we can proudly state that we are one of the world's most cutting-edge meat processors.'

‘We try to re-use everything we have, without any loss’

How does the monofermentor at Westfort work?



FUTURE-DRIVEN ENTERPRISE

Westfort is a typical family business. Our choices are motivated not solely by the short-term interests of shareholders, but also by moral values and a clear vision for the long term. 'We want to structure the company in such a way that we can pass it on to the next generation. Focusing on animal welfare, automation and energy efficiency are obviously part of that process.' As Piet sees it, this also means that he is stepping back so he can be there for his grandchildren. 'You always have to be able to explain why you do what you do. The guiding principle is doing what feels right.'

From scraps and waste to high-quality source **protein**

Field of soya

Are you sometimes asked to explain whether producing animal protein is still a responsible choice? Livestock farming is often portrayed in a negative light. This is partly because the farm animals eat crops that we could also eat ourselves. The next time someone asks you to justify your choices, remember these 4 reasons.

01

So any cookies that don't meet the factory's standards should just be thrown away and sent to the incinerators then?

Pig farming is part of the future! It used to be that every farm had a few pigs that were fed on the scraps from the fields and the household meals. Dairy farms used milk to make cheese, and the whey that was left over went to the pigs. That's how farmers turned scraps into high-quality animal protein. We still have scraps left over from our food, but on a much bigger scale. Cookie factories and cheese-makers are just a few examples. Many people seem to have forgotten that pigs play a vital role in circular food sustainability.

02

Are you willing to eat soya chaff, whey and brewer's draff?

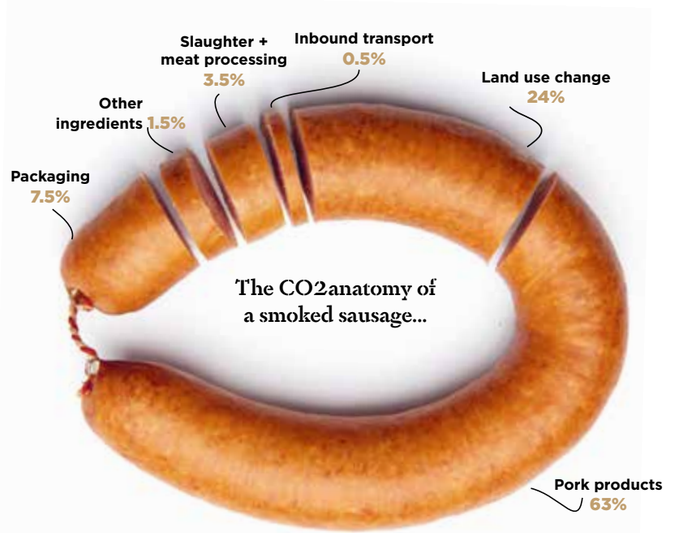
It's not like we are going to grow entire fields of lettuce just for pigs to eat. There are plenty of waste flows worldwide that are still suitable for pig feed. It's good that they can be repurposed in valuable ways. Let's take cheese, for example. The cheese-making process involves separating the whey from the milk curds. There are not many products that can be made from whey, even though it does contain very nutritious proteins. Our pigs love it. They are also fed stale bread and wheat bran, the middlings left over from the wheatberry once it is ground into flour.
As you can see, we repurpose various waste flows for our pig feed. We are only allowed to use the products from the KDV Raw Materials List. That means we always know exactly what the pigs are eating and can ensure sustainable, healthy production.

03

CO_2 emissions from a plant-based sausage are higher than our pork sausage

KDV commissioned the renowned and independent market research bureau Blonk Consultants to calculate the CO_2 footprint of our KDV pork. Blonk compared various types of smoked sausage: pork, beef, chicken, vegetarian and vegan. And guess what? The pork smoked sausage had a lower CO_2 impact than the vegetarian or vegan sausage. Per kilogram of product, the CO_2 impact was fairly equivalent.

However, a vegan smoked sausage provides much less protein. Measured by kg of protein, our smoked sausage was the best in the whole study. Since this year, participating farmers have also been measuring CO_2 emissions on their own farms. This information helps them pinpoint where they might be able to improve. We are leading the sector in this area, and we are very proud of that!



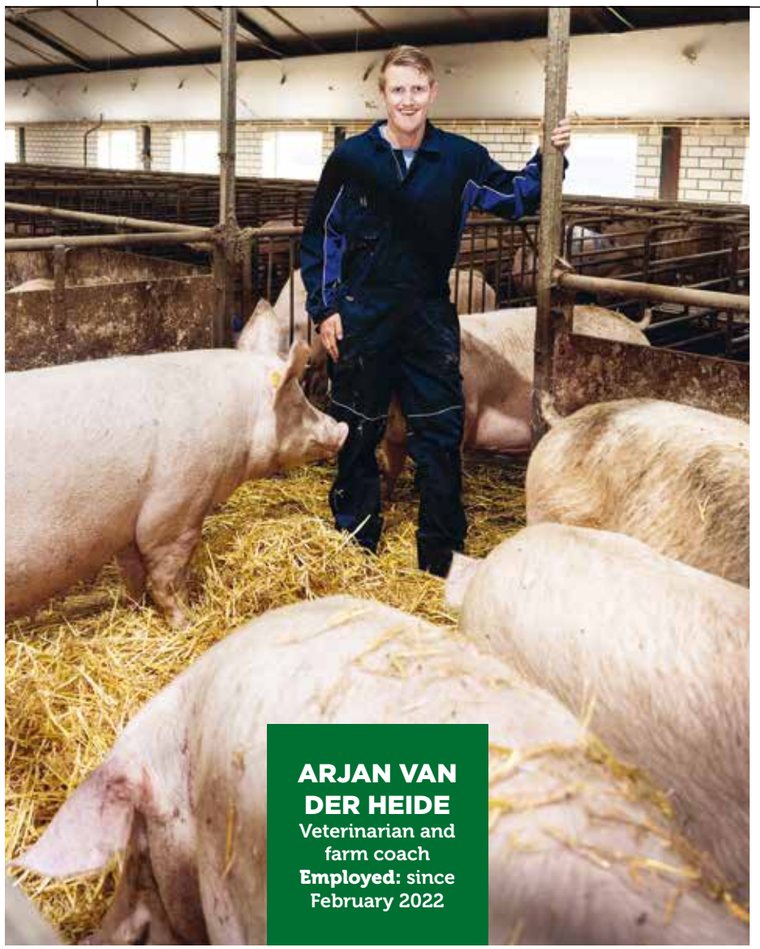
04

We are continuously looking for more ways to reduce CO_2 emissions

CO_2 emissions are largely determined by what the pigs are eating. Soya hull pellets (byproduct of soy oil) are an important protein source for our pigs. The soya fed to our pigs is sustainably cultivated (RTRS). Working with various feed specialists, we try to find ways to reduce soya content in feed from about 10% to 5% and to guarantee 0% deforestation. This is achieved by using waste flows from poultry slaughterhouses, for example. That would represent a huge step forward in terms of CO_2 emissions.

Would you like to know more?

Or do you have any questions about the CO_2 footprint tool?
Contact info@dehoevebv.nl



ARJAN VAN DER HEIDE
Veterinarian and farm coach
Employed: since February 2022

What is the main focus of your work?
'I offer guidance to pig farms so they can meet the health requirements of the Sustainable Pork Value Chain Foundation. These include antibiotic use and the mortality percentage of the pigs. We try to find the right balance: on the one hand, you want to minimise antibiotic use, but on the other hand you do not want to withhold treatment if the pigs need it. That just leads to an increase in mortality. I help them take a closer look. Where could the farm still make improvements to prevent deaths, such as hygiene or sty climate? Or is the problem occurring earlier in the chain, at the breeder? I also support farmers in implementing Smart Farming.'

What is your perspective on sustainability?
'Keeping the pigs so healthy that they don't need treatment. Prevention is better than a cure. A healthy pig also shows better growth. It processes its nutrition intake more sustainably: it requires less feed to make one kilo of meat. That also means reduced CO_2 emissions per kilo of pork. And of course: the healthier the animal, the healthier the final product.'

What is your favourite pig?
'The Westfort York pig. It's a robust breed that is a good fit for current market demand. The Piétrain may be a bit prettier, in terms of external appearance, but that's a matter of taste.'

What are your thoughts on any recent or upcoming innovations?
'New vaccinations are constantly being launched on the market that have proved effective in achieving major antibiotic reduction. For example, one vaccine prevents pig illness caused by a specific intestinal bacteria. Or the project to be PRRS-free from 2050. PRRS is a viral illness that affects pigs' resistance to disease. The emphasis has shifted from curative to preventive treatment. As a result, the pig population in the Netherlands is steadily growing healthier. More and more farms have eradicated certain diseases.'

What are you proud of?
'That Westfort is actively working on animal welfare. The company truly wants to contribute to animal health throughout the chain. We have not one but three veterinarians here; that speaks for itself. Here at KDV, we work on all sorts of health projects. The vets also monitor the pigs on the slaughter line. Findings from the slaughter are provided to the pig farms, along with recommendations on how to address them. No other slaughterhouse in the Netherlands does that.'

Satay of pork tenderloin with peanut sauce

2 people – 20 minutes + 2 hours marinating time

- **kecap manis (Indonesian sweet soy sauce)** 5 tbsp
- **soy sauce** 1 tbsp
- **chilli sauce** 1 tbsp
- **lemon juice** 1 tbsp
- **garlic** 2 cloves, pressed
- **pork tenderloin** 400 g
- **shallots** 1, finely diced
- **vegetable oil** 1 tbsp
- **peanut butter** 5 tbsp
- **sambal oelek** 1 tbsp
- **water** 250 ml

1. To make the marinade, mix 2 tablespoons of ketjap with soy sauce, chilli sauce, lemon juice and one clove of garlic. Cut the pork tenderloin into pieces about 4 x 4 cm and combine with the marinade. Cover and let stand for 2 hours in the refrigerator.
2. Sauté the finely diced shallots and the other clove of garlic in the oil. Add the peanut butter, the rest of the ketjap, sambal and water and stir into a smooth sauce.
3. Remove the pork from the marinade and stack the marinated pieces onto 4 large skewers.
Grill the satay for 5 minutes on both sides until cooked through. Serve with the peanut sauce.

Daily manure removal ensures **healthy pigs**

We set high standards for the health of these pigs. For example, we have strict criteria for antibiotic use and focus extra attention on caring for sows and piglets. Air quality in the sty is also part of our integrated approach. Daily manure removal leads to reduced ammonia levels in the sty. We were interested in learning more about the impact of daily manure removal on the growth and health of meat pigs. De Hoeve Innovatie researched this topic, along with a student of Applied Biology at the HAS Green Academy. The study had positive results.

SOURCE-DRIVEN APPROACH

Air scrubbers are great at cleaning the outside air for the surrounding community, but do not affect the air quality inside the sty. By adopting daily manure removal, KDV has opted for a source-driven approach. This not only improves outside air quality for the surrounding community, but also for the pigs inside the sty. Research confirms it: Daily manure removal has a beneficial effect on concentrations of ammonia, methane and CO_2 inside the animal accommodations. These levels are lower compared to a traditional sty with an air scrubber. But the next question is: does this improved air quality also result in healthier pigs?

MEASUREMENT IS THE KEY TO KNOWLEDGE

The study conducted by De Hoeve Innovation compared meat pigs from an air scrubber sty to meat pigs from a sty with daily manure removal. Both the pig sties are located on the same farm. The animals share a similar history, since they all came from the same farm. The animals were tracked from 25 kg at the moment of placement all the way to the slaughterhouse. The data from the RFID ear tags was used to obtain information about birth, slaughter and medicine use.

Key results from the study:

- Animals in a daily manure removal system reach their target slaughter weight 9 days earlier. As a result, they also achieved nearly 30 grams/day more weight in lifetime growth. The differences are statistically significant (table 1).
- Animals from the daily manure removal system receive 76% less antibiotics (table 2).
- There were significantly fewer findings when pigs from the daily manure removal system were slaughtered. The main difference was seen in respiratory diseases (table 3)
- No significant differences were observed in meat quality (meat percentage, fat and muscle measurement, type AA, A and B).

Table 1: lifetime growth

	Daily manure removal	Air scrubber
Slaughter weight (kg)	96.5 (95.1)*	95.1
Delivery weight (kg)	121.7	120.1
Age (days)	194 (191)	200
Lifetime growth per day (g/day)	622	594

Table 2: antibiotics use

	Daily manure removal	Air scrubber
Number of pigs that received antibiotics	5.0%	21.0%

Table 3: slaughter findings

Number of findings per animal when pigs are slaughtered	Daily manure removal	Air scrubber
0	76.8%	70.0%
1	19.5%	24.9%
2	3.7%	4.5%
3	0%	0.5%
4	0%	0.1%

* The animals from the sties with daily manure removal were heavier on delivery to the slaughterhouse (96.5 compared to 95.1).
That is why the recalculated slaughter weight and age based on 95.1 kg is shown between brackets.

‘Working on a **shared vocabulary** for sustainability’

To attain the most sustainable solutions for the pork sector, KDV maintains close contact with the Ministry of Agriculture, Nature and Food Quality (LNV). 'We are working together on a shared vocabulary so we can objectively measure sustainability and implement cohesive management on that basis. A crucial consideration here is how to express the government objectives into sustainability goals for an individual pig farm." René Klein, project manager for Circular Agriculture KPIs, talks about the transition to circular agriculture in pig farming.

Hans Verhoeven: 'For KDV, the primary value of consultation with the Ministry lies in sharing our integrated approach. By doing so, we can work together to formulate clear KPIs for circular agriculture. Once the parameters for nitrogen, climate, water and animal welfare are clear, now and in the future, farmers can take those factors into account in investment decisions or innovations. That means you can anticipate what will happen.'

The Ministry of Agriculture, Nature and Food Quality (LNV) is working to achieve sustainable, future-proof agriculture in the Netherlands. This led to the Vision on Circular Agriculture that was published in 2018. René Klein: 'That prompted a discussion with all agricultural sectors, including KDV: what does circular agriculture mean for the pork sector? What challenges are involved and what opportunities are available? And how can we address that together in tangible ways? It should be noted that other forms of sustainable farming are often beautifully aligned with the principles of circular agriculture,' the project manager emphasises. He is appreciative that the Sustainable Pork Value Chain was established. 'If the sector takes the initiative to work on sustainability, the motivation comes from within and it's faster to get on the same page.'

SUSTAINABLE PERFORMANCE

Sustainability is a concept that everyone can interpret in their own way. René: 'That's why we looked for a shared vocabulary to be used by farmers, chain partners, government authorities, civil society organisations and researchers. So we can define sustainability in tangible terms and build a bridge between all those different groups.'

The Ministry found that common ground in a system of Key Performance Indicators (KPIs). 'Farmer sustainability performance can be objectively measured using KPIs,' René explains. 'If we can securely implement this system and show that it contributes to the goals, we can also reward performance accordingly, from the market side and from the government. That is already happening now on a smaller scale.'

That shared vocabulary will be developed by the government with the assistance of various knowledge partners and research institutes, including a feasibility review. 'To that end, we are organising pilot projects in various agricultural sectors throughout the country. The pilot projects will be guided by researchers to ensure that the science is solid.'

RESEARCH QUESTIONS

For the pork sector, the Ministry worked with KDV to formulate the research questions. René: 'What specific challenges are we focusing on in this sector, in terms of sustainability? Examples include themes like nitrogen, origin of the feed, animal welfare and energy. We want to achieve a clear overview of the current situation in pig farming, how the sector is performing on sustainability, and how we can improve that performance. In that context, we will also be working with the other parties in the pork sector, since we ultimately want to have a KPI approach that applies to the whole sector.'

KDV will be taking part in the pilot project with 25 affiliated pig farms. René: 'One research question from KDV, for example, is how the KPI approach can contribute to the pig farmer's profit model and what data is already available that can be used to calculate KPI scores.'

INDIVIDUAL LIST

In the end, the project manager also wants the goals (defined by the government, sector or region) to be expressed in terms of what that means for each individual pig farm. 'A farmer wants to know what he can expect; when is it good enough, and what do I still need to do? That means that the uniform approach will be tailored to each individual pig farmer, taking regional factors and other considerations into account.'

ACHIEVING OPTIMAL SCORES

Taking a combination of factors into account: that broad perspective is typical of the entire approach. René: 'We do not want to define a course based on one or two aspects – like animal welfare or climate, in isolation. That is also valuable, but the distinctive thing about this approach is the way that it looks at the entire spectrum of sustainability goals and how they interact. We still have a lot to learn here. One dairy farmer caught the essence: "The trick is not to get maximum scores on a few things, but optimal scores overall." And the same applies to pig farming, naturally.'

René Klein, project manager at the Ministry of Agriculture, Nature and Food Quality (LNV)

Would you like to know more?
Go to www.boerenkpi.nl

New features
Smart Farming

Are you already using the MijnWestfort app? Over the past 12 months, 188 farmers needed less than 2 minutes to check their own performance and compare it to the chain. Convenient if you want quick, easy insight into your KPIs, supplemented by opportunities for improvement. A wealth of data at your fingertips! The new features make it even easier, and much more fun.

IMMEDIATE INSIGHTS INTO DOZENS OF KPIS

In the app, you can run various analyses of your key performance indicators (KPIs). These KPIs go beyond the technical data: numbers delivered, weight, fat and muscle measurement, also looking at financial details (technical data converted into euros) and health (such as % pleuritis). The RFID ear tags let you see exact results per genetic line. The three genetic lines that you have registered most often (both boar and sow line) are compared to scores for these lines in the chain. You can also use the app to generate personal quarterly reports that offer insights over the longer term. Last but not least, you can also order products like enrichment materials, ear tags and lucerne.

NEW FEATURES IN THE LEADERBOARD

The leaderboard shows how your farm is performing compared to other Smart Farmers in three important areas.

1. RFID read score

If your RFID read score is higher than 95% three times in a row, you are eligible to take part in the pilot 'slaughter tag-free delivery' (read more about this on pages 26-27).

2. Lifetime growth

Curious to see how fast your pigs are growing on a daily basis and how you're doing compared to other farms? The app lets you categorise pigs into fast, average and slow growers. This helps you quickly identify opportunities for improvement.

3. Daily results

The app not only helps you measure results, but also tells you how long you took. Insights are nice, but if you really want to make good use of the data, contact the farm coach. The farm coach can work with you to develop a personal improvement plan, without any obligation. This is one of the ways that we help each other make our work even more fun.

By learning from the best-performing businesses, we can improve the chain, produce pork that is aligned even more precisely with market preferences, and boost our added value even more.

LEARNING FROM OTHERS

You can use the app to compare your performance to other farms, learning from the differences and optimising your own system. A nice example is the differences in the age at which pigs go to slaughter. In 2020, we observed that the average slaughter age for KDV pig farms was 189 days, at an average weight of 99 kilos. However, there are also KDV farms that deliver 99-kilo pigs at a slaughter age of 160 days. Pigs develop differently at one farm or another. In 2021, we dug deeper into the underlying causes of these differences. Based on our findings, we presented new KPIs in 2022 so all chain participants could see where there were opportunities for improvement.

Not using the app yet, but curious to learn more?
Go to the app store on your phone and download 'MijnWestfortapp'. Log in with your phone number or email address. Then you will get a message with a code to use as your password. Enter the code and you're all set! You can also log in on the website at Mijnwestfort.nl.

What is Smart Farming?

Smart Farming means using data in smart ways: collecting data, analysing it, and translating it into how the farm is managed. So farmers can optimise their work, both strategically and at the level of the individual animals. Within KDV, we use this technology to track the individual pig from birth to slaughter. We are the first chain in the world to make that possible.

The procedure

Pig farmers who use RFID (radio-frequency identification) give every piglet an RFID ear tag at birth. The farmer uses the ear tag at the animal's birth to record its individual details, including date of birth, gender and genetics of the father and mother. Every treatment the pig receives – such as antibiotics – is recorded using the RFID ear tag. All the recorded information is stored directly in a cloud database and can be used to improve farm management.

MijnWestfort app

In late 2020, we launched the MijnWestfort app, which replaced the website at mijnkdv.nl. Pig farmers that use RFID ear tags can also see data based on individual animal records via mijnwestfort.nl. The available data includes the age of the pigs, their lifetime growth to date, and the percentage of pigs that are guaranteed never to have been treated with antibiotics. In addition, pig farmers can analyse their technical data and the growth figures and lifetime growth of their pigs in comparison with data from farms that are raising the same pig breeds, which will help farmers determine if they are already at optimum performance or still have room for improvement.

Can a pig farm contribute to restoring biodiversity? Most measures to promote biodiversity are land-based: grasslands rich in herbs, varied field margins, no-till farming, and building plans with more generous allowances for green spaces. Even so, there are more options for pig farmers than you might realise.

Better soil quality

thanks to better manure: it really is possible!

The benefits

The benefits of combining daily manure removal, manure fermentation and ammonia stripping:

- significantly reduces ammonia and methane emissions on the pig farm
- produces green gas
- makes minerals from the manure available in the right forms for plant and soil health
- in combination, this yields various product flows that can be utilised in the context of the smart fertilisation strategy in horticulture and agriculture
- significantly reduces odours from manure

As a pig farmer, you may adopt measures that could potentially have a major impact on biodiversity in the longer term. However, they are not immediately visible or tangible, because most of them are involved in the process of handling animal manure. Manure affects soil life, but can also lead to pollution of the surface water and groundwater. And residues of biocides and heavy metals can end up in the environment. Take a look at the soil in a field that is being farmed intensively. There is a good chance that you'll see far fewer worms than 20 years ago. Microbial soil life too small to see with the naked eye (like bacteria and fungi) has also declined dramatically. There is growing evidence that good soil life leads to healthy crops. To support that, there will be an increasing demand for good, high-quality manure with minimal contamination.

MINIMISING DISRUPTION OF SOIL LIFE

For 25 years, KDV has been working to reduce the levels of copper and zinc in animal feed (emission norms), thus reducing the disruptive impact of these substances on soil health. Since 2010, KDV has been focusing on reducing antibiotic use. The aim here is not only to improve animal health and prevent antibiotic resistance, but also to combat disrupted soil health as a result of the residues that are dispersed from the manure.

PERFECT COMBINATION

The most important step that KDV is taking right now is the combination of daily manure removal, manure fermentation, and ammonia stripping (removing ammonia from the manure). This offers interesting prospects for livestock farming, both in terms of reducing nitrogen and greenhouse gases and the ambition to achieve 'green gas'. This combination is interesting because reduced emissions will become mandatory in the future, and reductions may also be rewarded.

FROM NEGATIVE TO POSITIVE IMPACT

In this combination, the emissions from methane and ammonia are converted into high-value products: green gas (= methane) and ammonia-based fertiliser. This very significantly reduces emissions of ammonia and greenhouse gases (methane as well as nitrous oxide) during manure storage and application in the fields. As an added bonus, it also significantly reduces the odours produced by manure. The nitrogen in the products to be spread on the fields comes in a less volatile form. This form can also be absorbed faster and more effectively by the crops. Less artificial fertiliser is required overall. Moreover, the green gas produced here offers a replacement for non-renewable natural gas, thus contributing to reducing fossil-based CO_2 emissions.

Would you like to know more?

Download the position paper on 'Opportunities for an integrated approach to nitrogen reduction and green gas'.

Less stress smart thanks to ear tag

Each pig receives a slaughter tag before it is sent to the slaughterhouse. This procedure is an essential aspect of animal identification and registration, which is why it is required by law. However, it does involve an extra procedure before the pigs are transported. 'Shouldn't there be another way to do that?', we thought. And that's why we launched a pilot for pigs without slaughter tags in 2019, working closely with the NVWA and the Ministry of Agriculture, Nature and Food Quality (LNV).

All pigs receive an ear tag when they are born, so the pig's origin can always be traced. Once the pigs are transported to the slaughterhouse, they receive a second (metal) ear tag. This is required by law, and is an important part of traceability. The farmer or the driver usually punches in the 'slaughter tag' on the tail-lift when the pigs are loaded onto the lorry just before transport to the slaughterhouse. This procedure can cause distress.

ANOTHER WAY

The farmers participating in the Smart Farming initiative also give their piglets an ear tag right after they are born. However, this ear tag is equipped with an RFID chip. This makes it possible to track that individual pig throughout their entire life, eliminating the need for the extra slaughter tag. Not only does it save the pigs the procedure, but it also makes the driver's job much easier. Now the driver can easily can all the ear tags of the pigs on the tail-lift from a distance. No stressful procedures for the pigs, no stress for the farmer or driver, and much faster: obviously, we are big fans.

DRIVING INNOVATION WITH KDV

The current laws do not yet allow pigs to be delivered without slaughter tags. To change that, we launched a pilot in 2019, working closely with the Netherlands Food and Consumer Product Safety Authority (NVWA) and the Ministry of Agriculture, Nature and Food Quality (LNV). This is because we first had to prove that the RFID ear tag would work within a watertight system. Twenty pig farms were initially selected to deliver pigs without slaughter tags. It went so well that nearly all KDV farms have now signed on.

> 'No slaughter tag means less stress for the pigs, the farmer and the driver'

CONTINUOUS IMPROVEMENT

For permission to deliver pigs without slaughter tags, it must be possible to read the RFID ear tag of at least 95% of the pigs that a farmer delivers. During the pilot project, we also check whether the ear tags stay in well during the processes in the slaughterhouse. For example, if the ear tag was not placed solidly in the middle of the ear, it falls out more easily. We can progressively reduce the tag loss percentage by giving the farmer feedback and helping to find a different way to place the tags.

EVEN MORE ADVANTAGES

The RFID ear tags have additional advantages. Since pig farmers keep records on any medical treatments, we can easily identify individual pigs. If a pig has received medication in the past 60 days, an alert will be displayed when the tag is scanned. This helps farmers avoid delivering pigs that are still in the waiting period, and saves you time looking it up in your records. The NVWA views this as a significant advantage compared to slaughter tags.

SLAUGHTER TAG-FREE DELIVERY MAY BECOME STANDARD

KDV is the first and only party to find a way to develop this concept. It takes years to get it all sorted out. What once started as a small-scale pilot has now grown into a seriously major undertaking. This scale-up is happening because the NVWA is very satisfied with the results of the pilot. We have every confidence that Dutch legislation on this issue will soon be changed, so it will no longer be necessary to arrange an exemption in order to deliver pigs without slaughter tags. Once that happens, it will be possible to use this new technology throughout the entire sector. Widespread interest has been expressed in the pork sector. We are obviously incredibly proud that KDV has once again been able to take another fantastic step towards sustainability.

>>

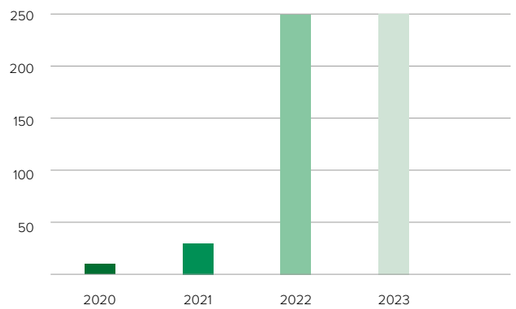
CO_2 footprint tool

ABOUT THE PROCESS

Since 2020, we have been calculating our CO_2 footprint based on individual farm data from our participants. We use the Life Cycle Assessments (LCA) method from Blonk Consultants, which conform to relevant international standards, such as the PEF Guidance, PEFCR Feed, and the LEAP Guidelines set out by FAO. We started out with ten farms, running the numbers manually. Based on those initial results, we worked with Blonk to develop a calculation tool, which could then be used for a larger group of farms. That resulted in 30 pilot farms across 2021. In 2022, we integrated the calculation tool into the certification process, making it possible for us to supply fully automated data for 2023.

Number of farms in the calculations

Number of UBNs

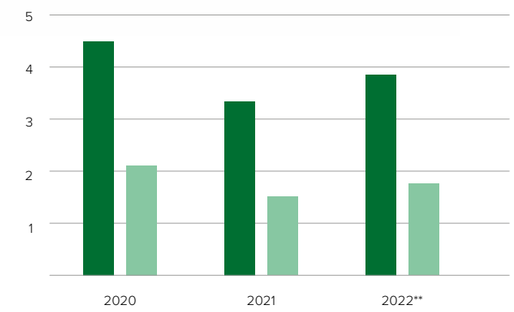


HOW THE RESULTS DEVELOPED OVER TIME

Blonk Consultants developed a high-precision tool especially for KDV that provides clear and transparent calculations for the CO_2 footprint of our smoked sausage. Traditionally, a product's CO_2 footprint is expressed in terms of kg CO_2 equivalents per kg of product. To facilitate comparison with other protein sources, we also calculated the CO_2 equivalents per gram of protein. Compared to 2020, the data for 2022 was not only better, but also more accurate thanks to increased participation.

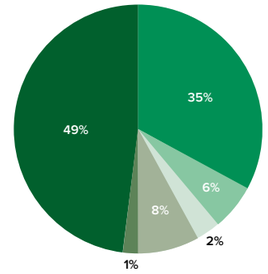
CO_2 footprint of smoked sausage*

CO_2 equivalents

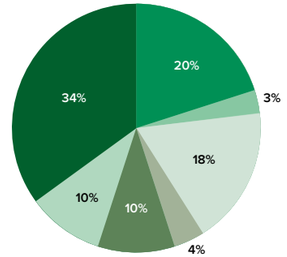


* Based on economic allocation.
** For the farms that have already provided figures to us.

Breakdown of the CO_2 footprint of a sow farm



Breakdown of the CO_2 footprint of a meat pig farm



The average CO_2 footprint on our sow farm works out to 3.5 kg CO_2 equivalents per kg of product. For meat pigs, this is 2.9 kg CO_2 equivalents per kg of product. At our sow farms and meat pig farms, our weighted average is lower than the national average.

This transparent tool puts us at the forefront in the chain and lets us see exactly which factors we need to tweak in order keep improving our CO_2 footprint. For example, we can see that feed represents a significant percentage of our emissions. Our challenge for the next few years will be to find out how we can keep shrinking the footprint. We will manage, especially if we keep working together as a sector to make the effort and keep innovating.

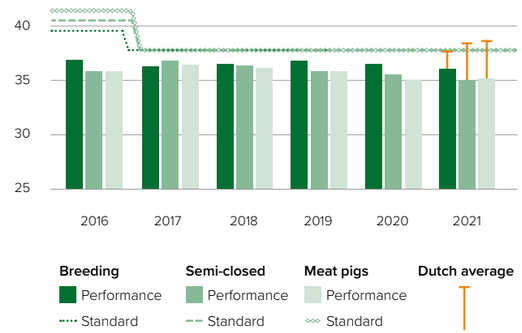
Figures for 2021

MINERALS

Nitrogen and phosphate are essential minerals in the dietary requirements of pigs. However, feed that is too rich in nitrogen and phosphate is not good. Any surplus amounts of these valuable minerals are excreted in pig manure, ending up in nature and disrupting the minerals cycle. To prevent this disruption, we here at KDV have been working since our establishment in 1997 to achieve an optimal balance between sufficient nutrients for pigs and minimised emissions for the surrounding environment. By doing so, we close the minerals cycle.

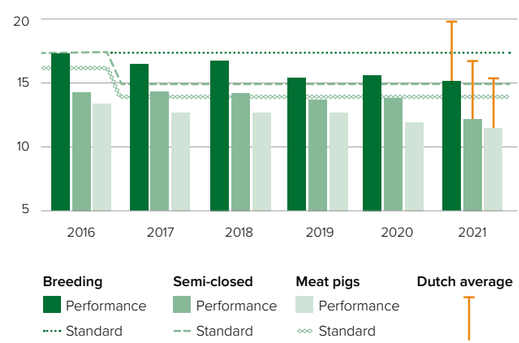
Nitrogen

Excretions per 1000 kg of growth



Phosphate

Excretions per 1000 kg of growth



In 2018, the figures were based on fewer farms than in other years, because errors had been made in an audit of the figures.

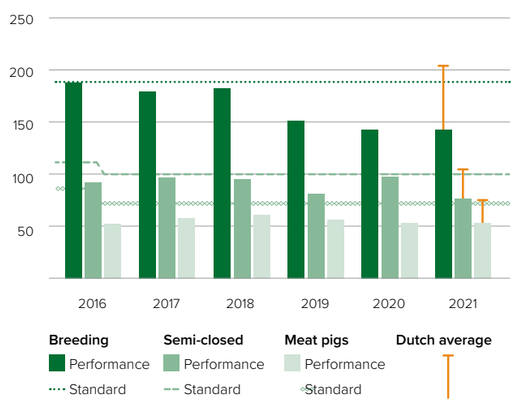
Figures for 2021

BIODIVERSITY AND SOIL

Copper and zinc are micro-nutrients that are needed in small quantities by animals (and people) to maintain fundamental processes in the body, such as growth and health. When pigs ingest too much copper or zinc, it is excreted in the manure and ends up in the fields and meadows. When that happens, it has a direct impact on soil life and biodiversity. KDV therefore limits the amount of copper and zinc that pigs ingest through their feed, and then release into the environment.

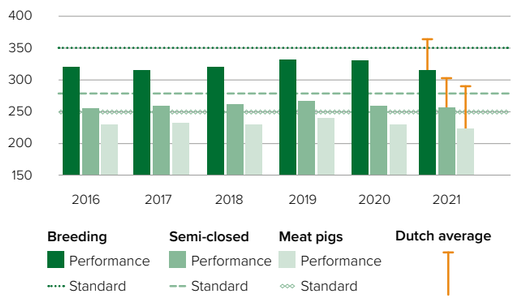
Copper

Supply per 1,000 kg of growth



Zinc

Supply per 1,000 kg of growth

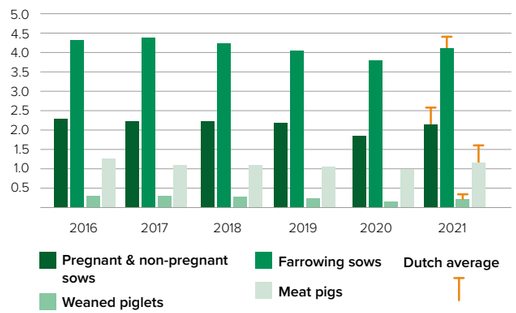


AMMONIA

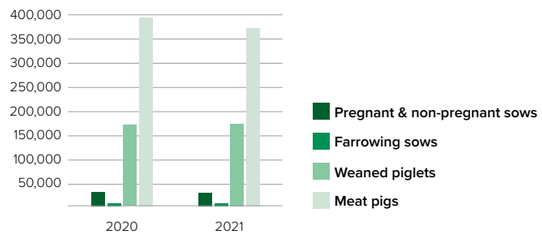
Ammonia is a naturally occurring chemical which is released from manure. In high concentrations, ammonia can be harmful to animals, people and the environment. The level of ammonia emissions is determined by the chosen sty system.

Ammonia

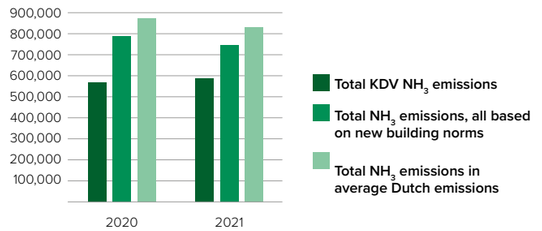
Kg NH_3 per animal quarter per year



Number of quarters per animal category



Kg NH_3



KDV performance in 2021 compared to new building norms: **28% better**.
KDV performance in 2021 compared to Dutch average: **10% better**.

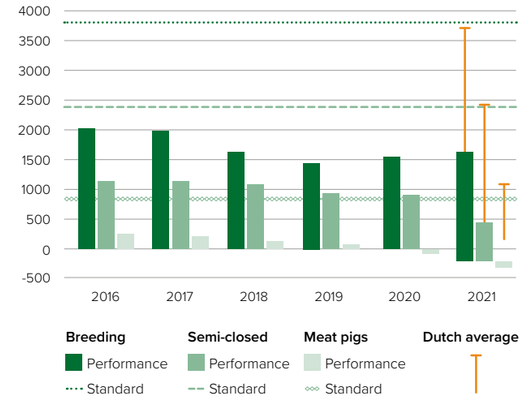
The last table shows NH3 emissions in kg from all the farms in the Sustainable Pork Value Chain (KDV). The second row shows the total amount of NH3 that those same farms would emit if all their sties were constructed according to the new building norms.
The third row shows NH3 emissions of those same farms if their facilities were based on the Dutch average.

ENERGY

KDV aims to achieve energy-neutral pig farming. We are moving ever closer towards that goal: various pig farmers in the chain are already net energy producers. Over the past 25 years, we have worked hard to develop a solution to make that possible. The latest innovation was daily manure removal in combination with monofermenting: fresh manure is moved into a fermentation system and converted into biogas, which is used to produce heat and electricity.

Energy consumption

MJ/1,000 kg of growth



A slightly different calculation was used from 2016 on, assigning a slightly higher significance to gas. Figures for 2016 are 7%, 4% and 2% higher for the breeder, the closed farm and the meat pig farmer compared to the old calculation method.

ANIMAL HEALTH

Animal health has a beneficial effect on animal welfare and on operating results. That is why KDV aims to keep animals as healthy as possible. The success of our methods is evidenced by the minimal amounts of antibiotics used on KDV pigs. The number of KDV pigs who are guaranteed never to have been treated with antibiotics is also increasing rapidly. They are selected for our Antibiotic-free Life Guarantee.

DDD

Animal daily dosages

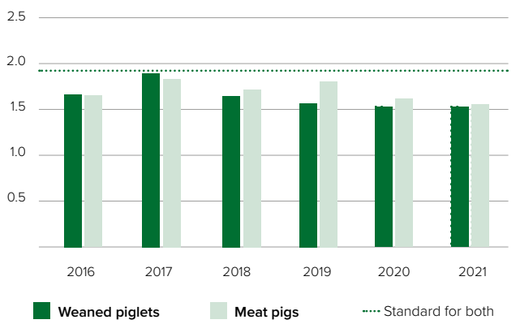
In 2015, the registration of antibiotics according to animal categories was changed throughout the Netherlands. The animal category of 'sows' was divided into sows with weaning piglets, and weaned piglets.

DEATH

Another key indicator of animal health is the percentage of death among weaned piglets and meat pigs.

Death

Percentage



Bring KDV's knowledge into the sty

ALWAYS AWARE

KDV farmers who join our Smart Farming initiatives receive the best information about their own company, and have the option to compare their own performance to other participating farms. The special apps give farmers real-time insight into key indicators, so they can always monitor their own performance.