

Crafting proteins, shaping the future

SDG report



Promyc[®]

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preface

It is with great pride that we present Naplasol's first ever sustainability report. As a young company founded in 2020, we are aware that sustainability is more than a choice, it's a necessity. This report offers a transparent look at our operations, our innovative approach to mycoprotein production, and our relentless efforts to minimize our environmental impact.

At Naplasol, sustainability is the cornerstone of our business. Our mission is to develop essential proteins through the fermentation of filamentous fungi. These mycoproteins provide a healthy, sustainable, and highly nutritious alternative to both plant- and animal-based proteins. They offer versatility, nutrition, and adaptability to various dietary needs, making them a valuable ingredient for food, feed, and pet food industries.

By harnessing the power of fungi, we address the global demand for protein while preserving vital natural resources. Our Promyc® mycoproteins stand out for their significantly lower carbon footprint, reduced land and water use, and minimal ecological impact compared to other protein sources.

Located in Bree, Belgium, our production facility exemplifies our dedication to sustainability and innovation, with a current capacity of 10,000 metric tonnes annually and ambitious plans to expand to 100,000 metric tonnes. Moreover, our fermentation technology knows no geographical boundaries; it can be deployed world-wide, ensuring consistent and efficient production of mycoprotein across diverse locations.

Fungi have played an important role in food production throughout history. Our ambition is to restore this legacy, with a modern touch, and tackle the challenge of feeding a growing global population sustainably. We hope this report can inspire confidence in our ongoing commitment to a greener, more resilient future for the global food industry.

Sincerely,
Wim Slee
CEO Naplasol

About this report

Welcome to the first sustainability report on mycoproteins, presented by Naplasol. To evaluate how our business helps advance sustainable development – by minimising negative impacts as well as maximising positive impacts on people and the planet – we turned to the **UN's Sustainable Development Goals (SDGs)**.

Our mycoprotein production, a commitment to sustainability



At Naplasol, sustainability is at the heart of our mycoprotein production process. Committed to the United Nations **'Sustainable Development Goals'**, we stand apart from traditional protein production as we create protein through fermentation.



The SDGs define global sustainable development priorities and aspirations for 2030 and seek to mobilise global efforts around a common set of goals and targets. Therefore, they present an opportunity for business-led solutions and technologies to be developed and implemented to address the world's biggest sustainable development challenges.



About us

Naplasol specialises in the production of essential proteins through the fermentation of filamentous fungi strains. Our Promyc mycoproteins offer a healthy, sustainable, and nutritious alternative to both plant- and animal-based proteins, catering to a diverse range of (food) industries worldwide.

Proud member of the VEOS Group

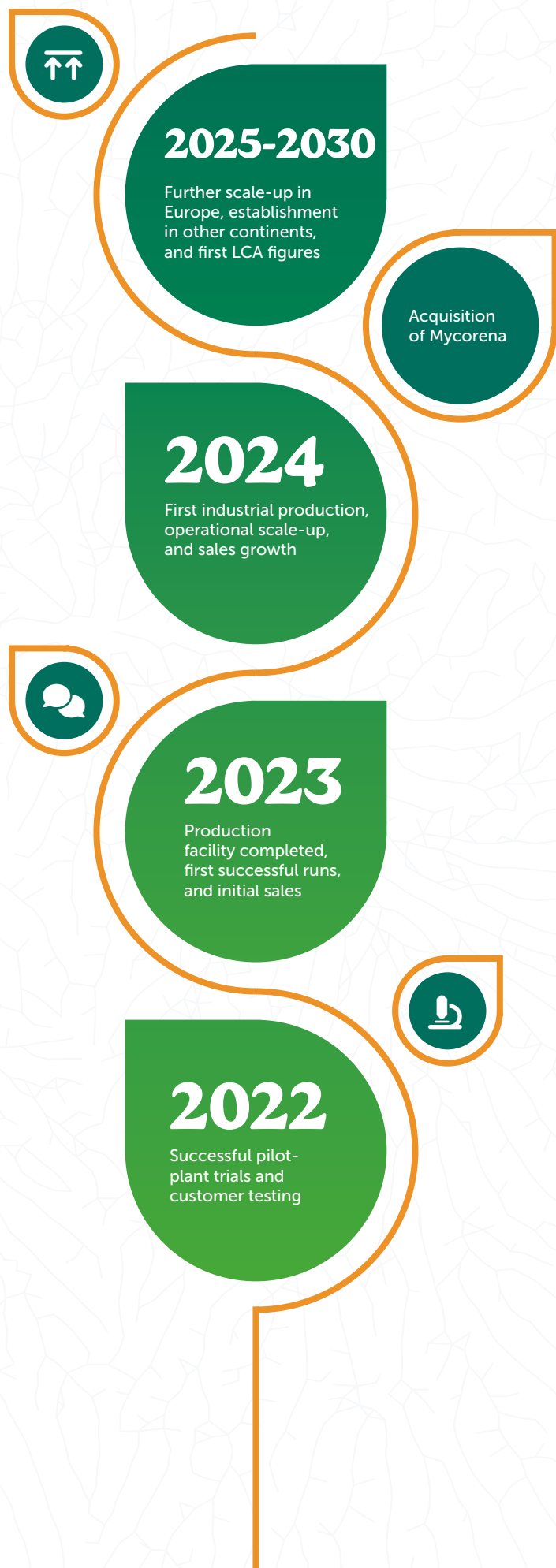
Naplasol was founded in 2020 as a new business unit of the VEOS Group, one of the global leaders in the protein market. The VEOS Group extracts and concentrates natural proteins from by-products, each possessing unique characteristics, which are used as ingredients in food, feed, pet food, and para-pharmaceutical applications.

Since its establishment in 1974, the VEOS group has achieved steady growth through continuous innovation. Over the years, the Group has developed an international network of sales distribution offices and production sites. Today, the VEOS Group operates production plants in Belgium, France, Poland, Spain, Brazil and USA with sales offices in Chile and Taiwan.

Local production, global reach

Our production site in Bree, Belgium, boasts an impressive capacity of 10,000 metric tonnes of mycoproteins per year, with plans to expand to 100,000 metric tonnes annually. This expansion demonstrates our commitment to meeting growing demand and ensuring a steady supply of high-quality products.

As we strive to establish ourselves as one of the global leaders in the industry, we are committed to setting up multiple fermentation units worldwide. Our technology's remarkable resilience, unaffected by climate or geographical constraints, ensures that our facilities deliver the same level of efficiency, reliability, and high-quality production, regardless of location.



Natural fermentation

At Naplasol, sustainability is at the heart of our mycoprotein production process. Aligned with the United Nations' Sustainable Development Goals. We create proteins through a natural fermentation process, using the carbohydrate-rich byproducts of plants rather than their protein content. This approach preserves plants' primary value while transforming secondary resources into sustainable proteins.

Our Promyc mycoproteins are produced through a state-of-the-art fermentation process that spans several crucial stages. It all begins with the careful selection and cultivation of filamentous fungi strain(s) in our specially designed fermentation vessels, or bioreactors. These are tailored to create an optimal environment for fungal growth and protein synthesis.

The fermentation process continues with the inoculation of fungal strains into a nutrient-rich growth medium, packed with carbohydrates and essential nutrients for fungal growth and the production of nutritious biomass.

As our fungi thrive and metabolise the nutrients in the medium, they develop a dense network of mycelium – the filamentous structure characteristic of our fungi. We closely monitor and control factors such as pH, temperature, agitation, and oxygen levels within our bioreactors throughout the fermentation process to ensure optimal fungal biomass and protein yield.

We carefully time the harvest of our mycelium, typically during its exponential growth phase when protein production is at its peak. We use simple, natural techniques for harvesting, tailored to the specific characteristics of our fungal strains and the nuances of our fermentation process. No extrusion, extraction, or chemical methods are employed.



Rich history

*For centuries, fungi have been harnessed in fermented foods to extend shelf-life, reduce volume, shorten cooking time, and enhance nutritional value. In Europe, *Penicillium roquefortii* and *Penicillium camembertii* are crucial in producing blue cheeses like Roquefort and Gorgonzola, as well as soft-ripened cheeses like Camembert and Brie. In Asia, *Monascus purpureus* is used to produce red yeast rice, while *Aspergillus oryzae* ferments soybeans to create hamanatto, miso, and shoyu.*

The use of mycoproteins experienced a revival in the 1960s. Unlike traditional methods, filamentous fungal biomass can now be directly processed into mycoproteins for consumption. This innovation addresses the growing demand for protein-rich foods while mitigating the environmental impact of conventional food production.



2021

First tasty biomass produced in our lab



2020

Establishment and investment

Let's co-create with mycoproteins



Introducing mycoproteins essential ingredients

The world is at a critical juncture. To nutritiously feed a projected 9.8 billion people by 2050, global food production must increase by 50%. Meeting this challenge, while respecting the UN's Sustainable Development Goals, requires that 70% of this growing demand is met through efficiency-enhancing technologies. In this context, mycoproteins present a highly promising solution, offering a nutritious, healthy, and environmentally friendly source of protein.



Valuing the power of fungi

Mycoproteins are derived from filamentous fungal biomass, a protein-rich food suitable for human consumption. The part of the fungus used in mycoprotein production is the mycelium, which can be compared to the roots of the organism. Mycelium is an underground network of thread-like structures that spread through soil or wood, absorbing nutrients and supporting the growth of mushrooms. With its rapid growth and high protein content, mycelium is an ideal source of protein for food production.

Healthy, nutritious, and balanced

The fungal biomass used to produce mycoproteins contains a protein content ranging from 40% to 60% on a dry matter basis. Unlike many other plant-based proteins, mycoprotein contains all nine essential amino acids (EAAs) in sufficient amounts, often

surpassing the levels found in both animal- and plant-based proteins, making it a complete and vital source of protein for human health.

In today's protein-rich diets, it is crucial to evaluate the quality of proteins consumed. This is best measured through the **Protein Digestibility Corrected Amino Score (PDCAAS)**, which assesses a protein's nutritional value based on its amino acid profile and digestibility. Mycoprotein stands out with a high PDCAAS score (> 0,99), reflecting its exceptional balance of essential amino acids and excellent digestibility, making it an ideal choice for meeting dietary protein needs effectively and efficiently. Beyond its protein content, mycoprotein is a natural whole food rich in dietary **fibre** (20% to 40% on a dry matter basis), including beneficial fibres like chitosan and beta-glucan. Additionally, it is low in saturated fats, sugars, and sodium.

Mycoproteins also provide essential **B-vitamins and minerals**, including iron, zinc, and calcium, contributing to a well-rounded and balanced diet. Numerous studies have shown that a mycoprotein-rich diet has positive health impacts, from promoting muscle growth and regulating blood cholesterol levels to ensuring adequate dietary fibre intake.

Moreover, mycoproteins are compatible with a variety of diets, including vegan and flexitarian diets, as they are **allergen-free, GMO-free, and free from anti-nutritional factors** that can hinder nutrient absorption. The mycoproteins we produce have been safely consumed for generations and are therefore considered **non-novel foods**.



Not on the list of the 14 most common allergens



No novel food and GMO free



No anti-nutritional factors linked to mycoprotein



Low processed food and label-friendly "mycoprotein"



HIGH IN FIBER



COMPLETE PROTEIN



LOW IN FAT



DIGESTIBILITY

Versatility in application

Mycoproteins are a highly versatile ingredient, with applications in the food, feed, and pet food industries.

In the **food sector**, mycoproteins offer a blank canvas with a neutral taste and unique texture, making them an excellent base for various products. From protein-rich cheeses and savoury snacks to meat analogues and enhanced plant-based dishes, mycoproteins provide the essential amino acids often missing in other plant-based proteins. Their off-white colour allows them to be easily incorporated into a wide range of food products without altering their appearance. Simultaneously, their high fibre content promotes a healthier diet, aligning with growing consumer demand for nutritious, plant-based options.

Promyc

In the **feed and pet food industries**, mycoproteins provide similar benefits by meeting the need for sustainable, high-quality protein sources. Their efficient production process—marked by low carbon emissions, reduced land use, and minimal water consumption—aligns perfectly with the industry's movement towards more eco-friendly practices. Mycoproteins' high nutritional value ensures that animals receive the essential proteins required for their growth and health, making them a superior alternative to traditional animal- and plant-based proteins. Professionals in these sectors can use mycoproteins to create innovative, health-promoting products that cater to evolving market demands while supporting environmental sustainability.



Promyc[®]



'Your industrial partner for 100% natural fermented mycoproteins created for delicious food products'.



Producing and supplying highly sustainable products

The food sector is widely recognised as a major contributor to global warming, resource depletion, and other concerning environmental issues. Addressing these challenges requires sustainable food solutions that reduce environmental impact while meeting the nutritional needs of an expanding global population. Mycoproteins represent a nutritious, healthy, and sustainable alternative for the food industry. By embracing mycoproteins, we are actively contributing to a more sustainable future where food production aligns with environmental stewardship and global health.



1. Reducing environmental impacts

Research shows that food production is responsible for approximately 25% of global greenhouse gas emissions. However, the production of mycoproteins has a significantly lower carbon footprint compared to many plant resources. With further investments in energy efficiency and renewable energy sources, mycoprotein production could potentially achieve emissions of less than 1 kg CO₂e per kilogram.

In addition to its low carbon footprint, mycoprotein production significantly reduces both land and water usage compared to conventional plant-based protein sources. This is particularly important in the context of global food production, where increasing demand for protein is putting immense pressure on agricultural resources. Traditional crops like soy or peas require vast areas of arable land and large quantities of water for cultivation, which can contribute to deforestation, habitat loss, and water scarcity.

Mycoprotein, on the other hand, is cultivated in controlled fermentation environments that do not depend on fertile land or extensive irrigation. This not only minimises the need for agricultural land but also greatly reduces water consumption. The result is a highly efficient process that conserves vital resources, making mycoprotein a far more sustainable option for protein production in comparison to many plant-based alternatives. Furthermore, by decreasing the strain on land and water resources, mycoprotein production supports the preservation of ecosystems and biodiversity, helping to maintain environmental balance while meeting global nutritional needs.

	CARBON FOOTPRINT	LAND USAGE	WATER USAGE
	kg CO ₂ e/kg product	m ² /kg product	l/kg product
Mycoprotein (circular, efficient & green energy)	<1,0	<2,0	<500
Promyc	1,6	<2,0	<500
Mycoprotein (UK)	2,3	3,0 - 4,0	1800 - 2000
Textured soy protein (EU)	7,8	4,0 - 5,0	3000 - 4000
Textured pea protein (CA)	4,5	3,0 - 4,0	1500 - 2000
Texture vegetable protein	7,9	4,0 - 6,0	2500 - 3500
Soy protein isolate (EU)	8,8	8,0 - 10,0	6000 - 7000
Pea protein isolate (EU)	4,5	5,0 - 6,0	2500 - 3000
Wheat gluten (EU)	2,8	2,0 - 3,0	1600 - 2500

Note: These values are approximate and can vary based on specific production practices, geographic location, and technological advancements.

2. Maximising protein yields per hectare

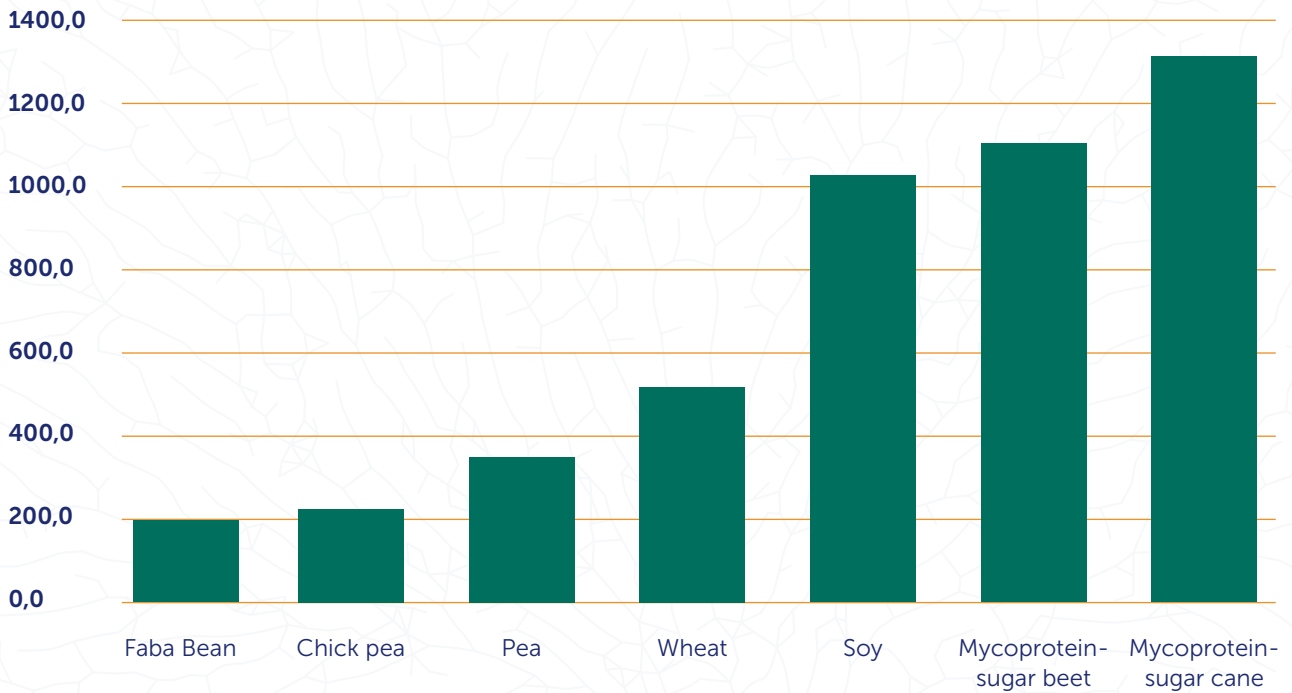
As the global population continues to grow, the availability of arable land is increasingly constrained. Mycoprotein production offers a highly efficient solution to this issue by maximising protein yields per hectare.

Protein production per hectare is a critical metric in evaluating agricultural efficiency and sustainability. Efficient production methods are vital to meeting global protein demands while reducing environmental impact. This involves optimising crop yields, improving livestock feed efficiency, and integrating sustainable practices such as crop rotation, precision farming, and the use of technology in monitoring and managing resources. By focusing on improving protein yields per hectare, we can enhance food security, lower greenhouse gas emissions, and promote sustainable land use practices.



Carbon Trust (2020). Environmental impact assessments of meat-free protein sources
 Finnigan, T. J., Needham, L., & Abbott, C. (2017). Mycoprotein: The Future of Nutritious Protein. *Food Research International*, 92, 54-62.
 Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. *Science*, 360(6392), 987-992.
 Rööß, E., Patel, M., Spångberg, J., Carlsson, G., & Rydhmer, L. (2016). Limiting livestock production to pasture and by-products in a search for sustainable diets. *Food Policy*, 58, 1-13.
 Nijdam, D., Rood, T., & Westhoek, H. (2012). The price of protein: Review of land use and carbon footprints from life cycle assessments of animal food products and their substitutes. *Food Policy*, 37(6), 760-770.
 Eady, S., Grant, T., & Patel, M. (2015). Evaluating the environmental impacts of a plant-based diet. *Environmental Impact Assessment Review*, 50, 1-13.
 van Middelaar, C. E., van Zanten, H. H. E., Rossier, S., Verburg, P. H., & de Boer, I. J. M. (2017). Global land use impacts of food production. *Environmental Research Letters*, 12(12), 124004
<https://apps.carboncloud.com/climatehub/product-reports/id/386326746554>
<https://apps.carboncloud.com/climatehub/product-reports/id/2922583261197>

kg protein/ha



3. Upcycling food waste

Globally, one-fifth of all food produced is lost or wasted, a staggering amount that equates to around 1.05 billion tonnes per year or more than one billion meals a day. This wastage represents not only a loss of valuable nutrition but also an enormous waste of resources like land, water, and energy used in food production. Addressing food loss and waste is essential for reducing global hunger and mitigating environmental impacts.

By upcycling high-carbohydrate by-products from food production into mycoprotein, we can transform this waste into nutritious food. This innovative approach helps reduce food waste and contributes to a circular food economy, where organic materials that would otherwise be discarded are repurposed into valuable resources.



Committing to sustainable operations

At Naplasol, sustainability is at the core of our operations. We are dedicated to sourcing raw materials locally, ensuring the highest standards of food quality and safety, and continuously reducing the environmental impact of our processes.



1. More than 95% European sourcing

Our Promyc mycoprotein production process relies on an efficient, regionally focused supply chain that spans various stages, from sourcing raw materials to manufacturing and distribution. At our Belgian production site, approximately more than 95% of our raw materials are sourced within Europe, underscoring our commitment to regional sourcing and minimising the carbon footprint of our supply chain. Notably, the primary ingredient in our mycoprotein production, sugar, is locally sourced from crops such as sugar beet, wheat, and corn. This approach supports local agricultural while reducing reliance on imported goods.

Following harvest, our mycoproteins undergo **rigorous testing** to ensure compliance with stringent food safety regulations. We only consider our mycoproteins suitable for incorporation into a wide variety of food products after they pass these tests.

Our dedication to quality and safety is further underscored by the **Food Safety System Certification 22000 (FSSC 22000)** for our Food Safety Management System. This certification encompasses international and independent standards such as ISO 22000, ISO 9001, ISO/TS 22003, and sector-specific Pre-Requisite Programs (PRPs) like ISO/TS 22002-1. Alongside these standards, the certification scheme also includes FSSC Additional Requirements to ensure comprehensive food safety management.

2. Ensuring food quality and safety

Quality and safety are paramount at Naplasol. Our Promyc products meet strict vegan standards, ensuring they are allergen-free and of the highest quality. Our commitment spans every stage of our process: from research and development to product delivery.

3. Reducing our environmental footprint

Mycoprotein production is already resource-efficient, particularly in water use, requiring significantly less than traditional animal- and plant-based proteins. However, we are continuously striving to reduce our reliance on natural water sources. Our goal is to lower our overall water usage and recycle at least 50% of our wastewater, converting it into potable water through advanced filtration processes.

4. Driving innovation

Currently, we employ biological water purification to treat our wastewater, but we are exploring introducing reverse osmosis (RO) to treat our wastewater. To maximise the efficiency of our resource use per unit produced, we invest in optimisation throughout our value chain. We are already taking steps to phase out fossil fuels (< 40%), promote renewable energy and reduce our energy dependency by investing in solar energy, and we will continue to do so in the future.

In addition, we are dedicated to reducing waste streams and maintaining minimal non-recyclable residual waste. On-site, recyclable waste is sorted and collected by specialised firms for further processing, resulting in the **recycling of 99% of our waste**.

Naplasol is at the forefront of fermentation innovation in the food, feed, and pet food industries. By utilising advanced strain selection and state-of-the-art fermentation and post-processing techniques, we have successfully brought one strain to production, with another soon to reach the market.

Our aim is to provide a diverse range of mycoprotein products that address the unique needs of our customers. While we currently offer wet biomass (Promyc S / Promyc L), we are actively exploring new product forms, including textured and powdered variants.

Aligned with European practices, we adhere strictly to non-GMO principles throughout our operations. Our approach not only aligns with the regulatory landscape but also reflects our commitment to sustainability and consumer safety.



Securing a sustainable supply chain

To ensure the sustainability of our operations, we require hold our suppliers to meet high standards. For instance, our procurement policy requires suppliers to be evaluated on criteria such as punctuality, quality, environmental performance, safety, and ethical standards.

This approach ensures that:

- Approved suppliers deliver the correct products, materials, and/or services on schedule.
- Specifications and mutual obligations are clearly defined.
- A sufficient stock of critical parts is maintained to support production needs.

Let's co-create with mycoproteins



Valuing our team

The backbone of any organisation is its people. At Naplasol, our employees are not just contributors; they are essential partners in our pursuit of more sustainability in the global food, feed, and pet food industry. Guided by our core values, we cultivate an environment where every team member is encouraged to share ideas and actively participate in shaping solutions.



Creating an engaging work environment

Our dedication to our employees goes beyond words. We are committed to creating a stable, innovative, and engaging workplace where individuals can thrive and grow professionally. Through continuous dialogue and collaboration, we nurture a harmonious work environment where every contribution matters, enriching both our corporate strategy and our commitment to corporate social responsibility.

Upholding ethical business practices

We have integrated an ethical code into our quality manual, which is shared with all our staff members. This code reflects our commitment to providing a safe and healthy workplace, ensuring good working conditions, promoting diversity, and fostering a culture of mutual respect. We are resolute in upholding human rights by strictly prohibiting child and forced labour. Additionally, we are committed to ethical business practices by adhering to all relevant laws, preventing bribery and corruption, safeguarding confidential information, and ensuring fairness in all our business operations.



The Naplasol values

Respect

We foster respect for both people and the environment, acknowledging that our actions today shape the world of tomorrow.

Entrepreneurship

Our commitment to effective entrepreneurship drives us to innovate and adapt, always seeking opportunities to make a positive impact while maintaining a humble approach to excellence.

Excellence

In our pursuit of excellence, we prioritise modesty, recognising that true greatness lies in continuous improvement and learning.

Innovation

We strive to push the boundaries of innovation, not only to create more sustainable practices but also to create tastier, more nourishing food products. With each innovation, we aim to not only meet but exceed the expectations of our stakeholders, clients, and partners, while contributing to a healthier planet for future generations.

Growing our team

As Naplasol continues to grow, so does our workforce. By focusing on permanent positions and adhering to collective bargaining agreements, we plan to expand our team in the coming years, ensuring equal opportunities for personal and professional development. Our internal and on-the-job training programmes empower employees to unlock their full potential, driving both individual success and collective advancement at Naplasol.

Providing employee benefits that promote sustainability

Since the inauguration of our facility in Bree, Belgium, we have prioritised employee benefits that support sustainability. This includes provisions for charging electric and plug-in hybrid vehicles on-site. Our company car policy exclusively features plug-in hybrids and electric vehicles. Additionally, all Naplasol employees have the option to lease bicycles for commuting, complete with insurance, maintenance, and breakdown assistance.

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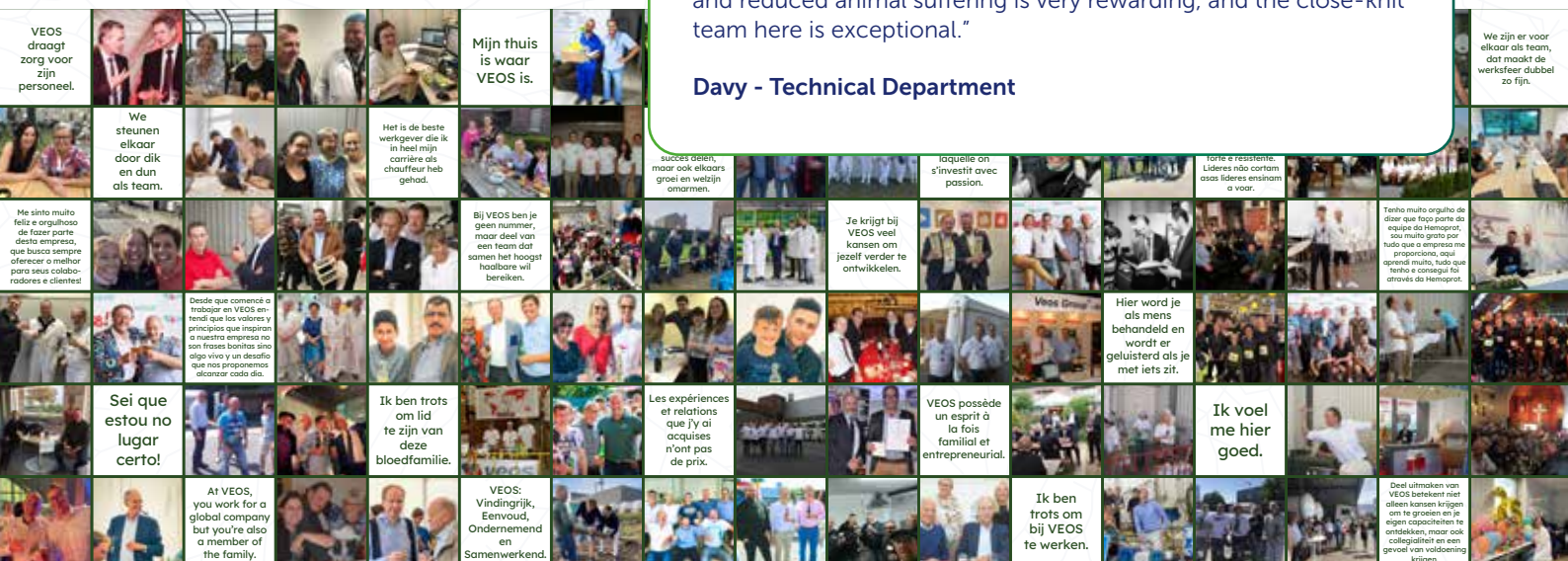
I enjoy working at Naplasol because the team is close-knit, and everyone gets along well. The workdays generally have a steady rhythm, but there's enough variety to ensure that every day brings something new. Plus, the subject matter is really interesting. During my first week, I felt a bit overwhelmed by all the information, but with good guidance and thorough explanations, that feeling quickly disappeared. I could ask as many questions as I wanted, which really helped.”

Kaat - Lab Technician

“

I was seeking a new challenge, preferably within a food processing company, and I found that at Naplasol. The chance to help the team get everything up and running and gradually bring structure to the company seemed like a fantastic challenge. Having worked in the food industry since I was 18, I understand the costs and efforts involved in meeting regulations and maintaining quality. While it can be challenging as the company isn't fully operational yet, I believe in our future and give my all every day. Knowing that I've contributed to a better environment and reduced animal suffering is very rewarding, and the close-knit team here is exceptional.”

Davy - Technical Department





Promyc[®]

LET'S GET IN TOUCH

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