

Annual Report 2021



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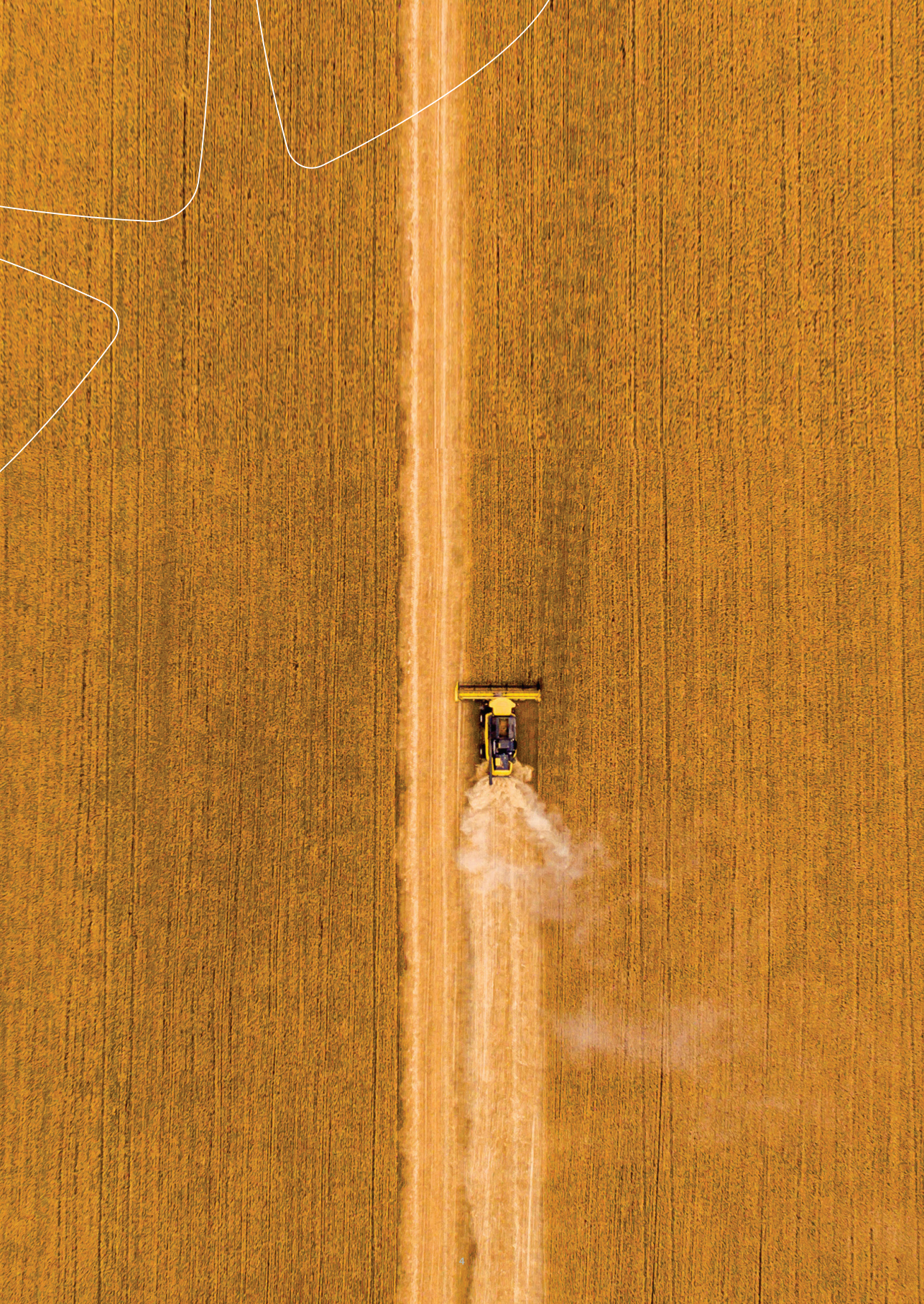
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Letter from our CEO and COO

It is with great pleasure we present to you the second Belchim Annual Report.

Last year's initiative to launch the first annual report was well received by our clients, employees, and other stakeholders. Again, this year we would like to share how we performed in the past year and what we have in mind for the future.

2021 was a year with a lot of significant changes and challenges. By the end of 2020, the vaccinations provided an accelerated pathway out of the COVID pandemic. A great triumph for science to find a solution so quickly and impressive to see the willingness of regulatory authorities to approve solutions at an unprecedented speed. It could serve as an example in the Crop Protection world, showing that with adequate expertise and resources there is no need to spend multiple years evaluating well-prepared dossiers.

The early hope of a quick return to normality was shattered by the unexpected behaviour of the virus, still being transmittable over vaccinated people, the emerging new variants, but also due to some societal resistance to vaccination. Also here we see parallels with our own industry. Not only a reminder that we are dealing with living organisms that are highly adaptable to their environment and quick to develop resistance to effective control measures but also that there is no 'magic bullet'; the most sustainable control is best achieved by combinations of the best technical advice, effective and efficient products combined with 'cultural controls' like good hygiene and awareness of infection risks.

Close to two years since the pandemic began, the economy has adapted largely and so has our way of living. Face masks are part of our daily life, we are still cautious in travelling and Teams and Zoom jingles have become familiar sounds.

A challenging farming environment

In the farming world, prices of commodities remain extremely strong. Even with high input prices for energy and fertilizers, farmers in the arable crops have largely had a good income and profit. On a global scale we notice a steady increase in production for the large food commodities such as rice, wheat, corn and soy, but this is hardly able to keep up with the increased demand. Strategic inventories are dropping for the fourth year in a row, challenging farmers to produce more for an ever-growing population that demands more and more food.

Crop Protection products play a vital part in securing and improving land productivity to enable production of more food, feed and fuel. We realise that the shift from chemical to biological crop protection is in full progress; our belief is that future sustainable crop protection will depend on the combination of modern chemical and biological products used in combination within the crop and even as combined or 'hybrid' applications'. The lengthy and expensive regulatory approval process for both chemical and now more and more biological Crop Protection does not support the needed innovation. The lack of an adapted and specific framework and expert structure for alternative Crop Protection solutions is slowing down introduction of new solutions for farmers. Good and well organized research is happening in both the public and private sectors with many promising and exciting discoveries including micro-organisms, plant and microbial extracts.

At the same time digital technology and precision application equipment is progressing like never before opening a clear path for novel application systems coupled to more reliable predictive risk models of when, where and how much to apply which may also help improve the reliability of biological products traditionally seen as more difficult to use. With more volatile weather due to climate change, our global food system needs the necessary buffer capacity to cope with the variability of the output. Scientific progress towards more sustainable and more productive growing systems will be crucial in the coming decades.

Being part of the Mitsui family

Mitsui AgriSciences International (MASI) agreed to acquire the 62% of Belchim Crop Protection owned by Belchim Management by jointly signing an agreement on December 6th 2019. This triggered an approval process with the European Commission Competition Authorities which finally concluded with a positive conclusion in February 2021. Covid-19 certainly played its part in the time taken to complete this process and in addition the detailed information requested in some very niche markets where application and use data is simply not available from the usual 3rd party sources also required more time than anticipated. MASI became shareholder in Belchim Crop Protection on 30th April 2021 and from that day onwards we finally became part of Mitsui & Co and in particular the newest member of the MASI global family of Crop Protection companies including Certis Europe, Certis Biologicals and the recently launched Cosaco (formerly Kocide LLC and Spiess-Urania GmbH).

2021 was a potato Late Blight year

When looking back on the company performance in 2021, we can conclude that after four years of predominantly dry weather in the potato growing areas of Western Europe, this year was really wet and consequently a high late blight pressure developed in potato crops. Unlike other wet years such as 2014 and 2016, this time the wet period started rather late, from the last week of June onwards, but lasted till the end of August. As potatoes are still Belchim's most important crop, this created a huge supply chain challenge. We showcased our company value of flexibility in our response to this changing demand, ensuring product availability throughout the whole season. A special thank you to all our colleagues for this great performance.

This year Belchim continued to bring innovative solutions to the markets, with a highlight being the successful market introduction of the Tough® corn herbicide in the US, a landmark event for the company. Adding a new mode of action that can help to combat the multiple resistant weeds resulting from the use of glyphosate tolerant varieties, has been welcomed by the US farmers and advisors as a major asset in their herbicide toolbox.



Growing together

Belchim and Certis Europe, both members of the Mitsui Agrisciences International family, have a unique positioning in the market, with a strong focus on technical advice and innovation. The combined pipeline of the two companies offers a broad range of solutions based on traditional crop protection products and biorational products. The final outcome of these combined forces will be an extended and improved offer to our customers and farmers, adapted to the changing demands for sustainability influenced by the EU Farm to Fork strategy and the Green Deal. We will help the farmer by offering practical solutions to increase their crop yields and better conserve their harvest, and ensure food production while also seizing other future farming opportunities, such as carbon sequestration in the soil and sustainable energy production.

As a result of the early collaboration between the two companies, in this annual report we include a joint section that covers a range of crop focused articles, each covering technical aspects of the challenges being faced by farmers and the solutions being explored. The expert teams of both companies have combined their technical expertise and know-how to provide a rich perspective and valuable input on each topic.

We hope you enjoy reading this annual report and that it infects you with the same excitement and opportunities that we see for our joint futures of growing together. Thank you for your continued support and we look forward to continuing working with you in the coming years

Mark Waltham
CEO Belchim Crop Protection

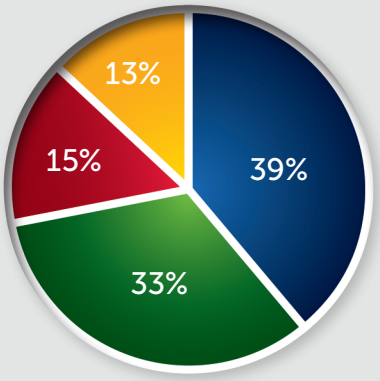


Johan De Saegher
COO Belchim Crop Protection



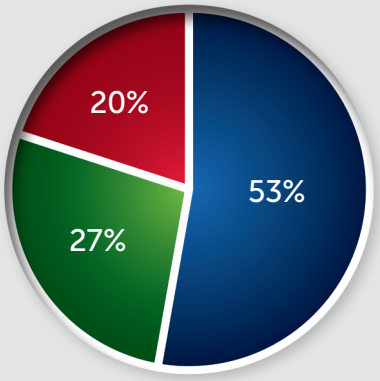
Key Figures

	Fiscal Year 2020-2021
Turnover	€460 m
EBITDA (% of turnover)	13%
Investment in R&D	€23.6 m
Numbers of Employees	469



Turnover by product type

- Fungicides: 39%
- Herbicides: 33%
- Insecticides: 15%
- Others: 13%



Turnover by product category

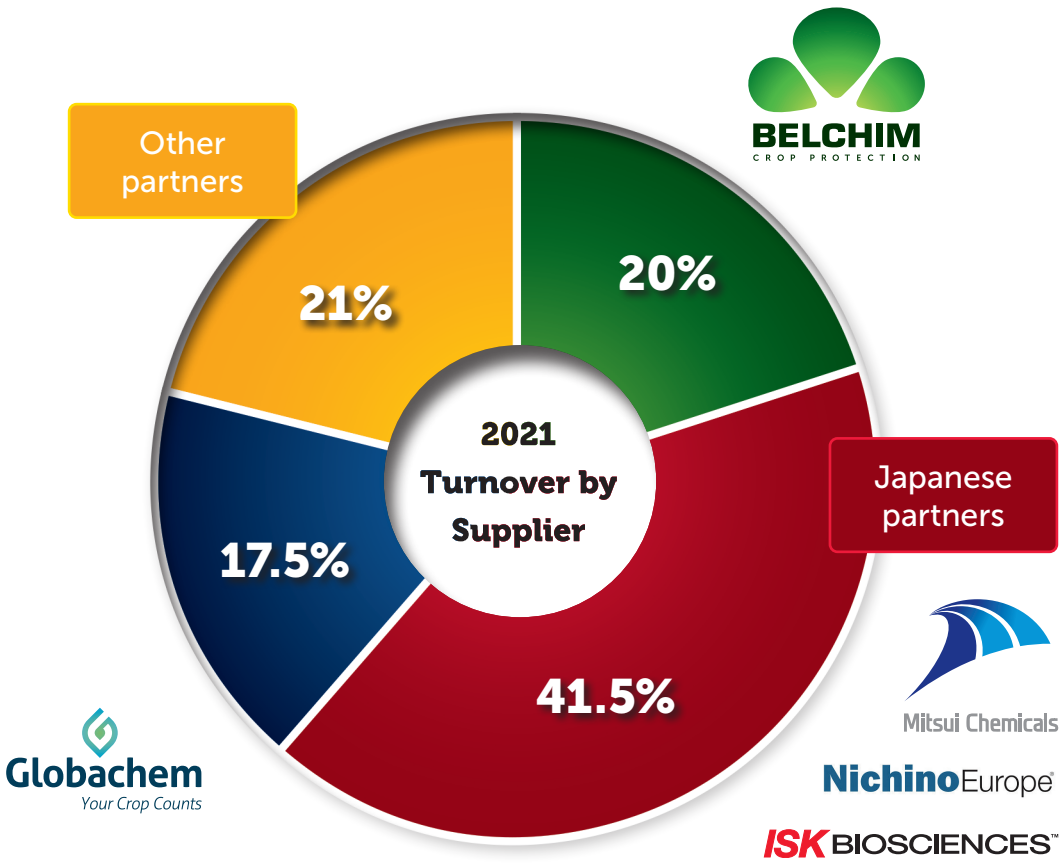
- Own molecule: 20%
- Proprietary: 53%
- Generic*: 27%

All figures are based on financial year ending September 30th 2021

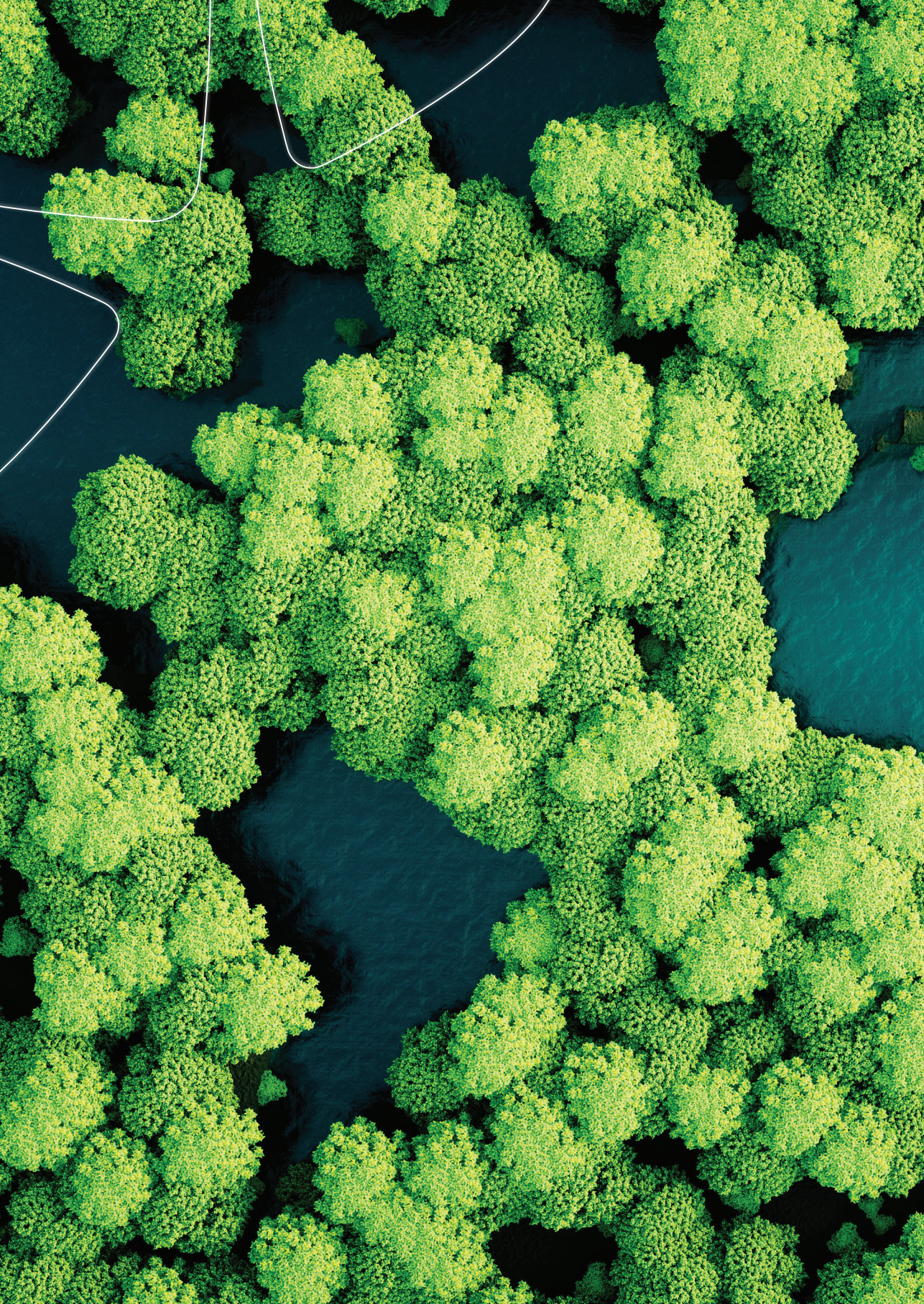
*Own products are based on molecules for which Belchim owns the intellectual property and/or a full active substance regulatory dossier; proprietary products are those that Belchim distributes on behalf of the original owner/originator/inventor of the molecule; generic products are based on molecules that were originally owned by a third party

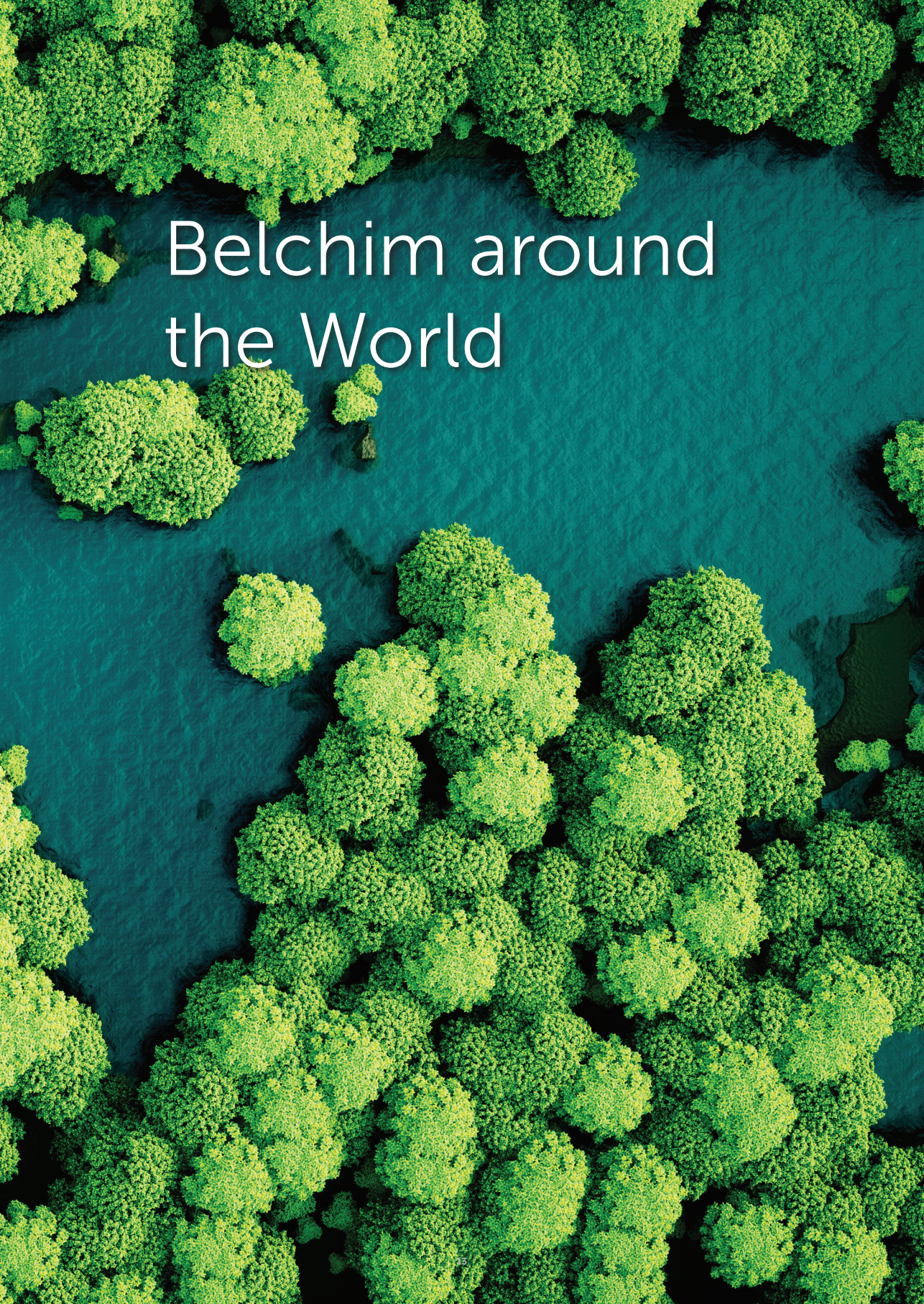
Key Figures

Turnover by supplier



All figures are based on financial year ending September 30th 2021





Belchim around the World

North & Western Europe



Weather conditions keep every season interesting and 2021 was no exception, starting with a cold and late spring, late frosts in vines and fruit and a very wet summer.

This wet weather drove Late Blight pressure and high sales in potato fungicides (particularly our Ranman, Kunshi & Cymbal products), compensating the reduction in potato acreage and the phase-out of Mancozeb products.

The region had several successful product launches, including Botiga in corn, a post-emergence herbicide based on one of our proprietary molecules, pyridate. In addition, we saw strong growth in exciting products like 1,4-Sight, a potato sprout inhibitor, and Gozai, which is increasingly becoming a reference product for desiccation.

It was also encouraging to see that we could maintain our market position with products that are now facing generic competition, such as Chikara (flazasulfuron) and Samson (nicosulfuron).



"Each year has its challenges, specificities and surprises, which is what makes this industry unique and exciting. In 2021, I was staggered by the huge demand for metobromuron on bush bean, as it became the preferred herbicide in the Western regions. I also got great pleasure seeing the renaissance of our own Lentagran (based on pyridate), proving that in times of discontinued registrations, we still have some of the "old reliables" in our hands."

Arne Schulz, Sales consultant, Germany



"After a short period of mild weather in the spring, it seemed to be an insect year. Due to climate changes to cool and wet weather, insect pressure decreased, and it became a real fungal year. As a result, we were able to see good results in our fungicide trials in 2021. We also have several interesting developments in our product range in the Netherlands, including the registration of Difol, Farao and Vintec. Next to these achievements, label extensions for Fresco and an article 38 for Ovitex give us new opportunities."

Ton Boers, Commercial & Technical Advisor, Netherlands

South & Eastern Europe



A wetter year meant overall demand for insecticides was weaker in the region. However, Belchim insecticide sales remained mostly stable, complemented by increased fungicide sales (+3.8%), and herbicide sales (+15%).

Belchim's business in this region experienced an overall growth of 11% in 2021. This was driven by some key product launches – such as Proman in Italy, Hungary and Romania and 1.4 Sight in Poland, Czech Republic and Serbia.

These impressive results were also the result of the hard work of the passionate teams in each country, who continue to find creative solutions to running the business during COVID times, such as creating a suite of apps for growers in Italy and holding more than 10 online big events for customers in Spain.



"Due to emerging sustainable farming rules and a focus on agrobiodiversity, the cultivated land with soybean increased in the region. Only preemergent herbicides were approved, and the Romanian team made the most of this opportunity and doubled the sales of Proman in 2021, creating big hopes for an even better market share in 2022!"

Alin Stana, Commercial Manager Romania, Bulgaria, Republic of Moldova



"We had a great year in Portugal, despite Covid. The team achieved a strong growth in sales and profitability. We had a positive start with the Shirudo launch and our prospects for the near future are very positive, given the innovation we will continue to bring to the market. We are very happy to contribute to the achievement of the company goals."

Maria Romeiras, Marketing Manager Portugal



North America

In the US, 2021 was another year of weather extremes, as we experienced Northern and Western drought, record flooding in central Midwest, and record cold in the south. Fungicide sales were negatively affected, particularly in California, while herbicide sales gained in many regions. In spite of the weather conditions in the Midwest, growers produced record amounts of corn and soybeans, with good yields and favorable prices.

Belchim USA was especially excited to launch Tough 5EC, based on Belchim´s proprietary molecule, pyridate. It was launched into corn, mint and chickpeas, and despite a late registration, it delivered strong results, a signal of its very bright future.

Canada suffered severe drought conditions in the prairie provinces that impacted yields of all cereal and canola crops, with production down 38% and 35% respectively. Even in a difficult season, we could further develop the sales of our growth regulator, Manipulator. Eastern Canada had a more stable season, with strong performance, particularly for our ISK, Nisso and proprietary brands. It was also exciting to launch Polaro into turf, where the product concept was well received, and further builds on our turf portfolio, alongside ISK´s Kabuto and Segway brands.



"The 2021 season posed many challenges with the continued global pandemic and many uncertainties in the marketplace. However, we were able to work together and overcome those issues to have a sell-out season of Tenchu in the rice market. The combination of in-depth research and trials, marketing efforts and having boots on the ground in key rice growing regions gave customers and growers the confidence to switch from other chemistries to Tenchu."

Laura Crawford, Regional Manager, California, South West, Mid-South, United States



"We had a very successful launch in 2021 for Tough 5 EC in the US corn market. Despite working through nation-wide shutdowns due to Covid, we still treated over 250,000 acres of corn with Tough. The entire Belchim team helped make this a great launch and have set us up for a special 2022 season."

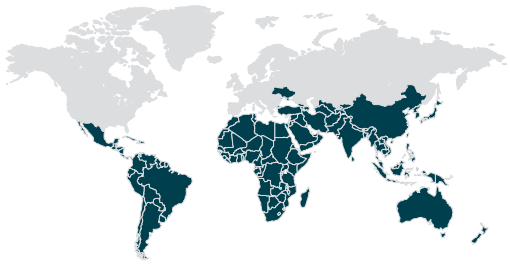
David Young, Regional Manager, Midwest



"Here in Canada, 2021 was a year of extremes with heatwaves and drought in the West and record yields in parts of the East. However, our overall market has remained strong and in my markets of potatoes, where we are the leader in phos acids, I was able to make significant gain with the soil insecticide Thimet; and began to explore a new market in dry beans with the copper fungicide Cueva. Despite Covid, our team's effort and determination enabled us to finish strong and exceed our budget."

Jamie Stringam, Technical Sales & Business Advisor, Canada

Rest of the world



This region is vast and represents significant future growth for Belchim Crop Protection. Every season we see the positive results of the strategy we set for the region five years ago. In 2021, the business grew by 61%, with similar growth rates expected in the coming years.

Due to the ongoing work of the development and regulatory teams, the region has a strong pipeline of upcoming registrations, including in some of the world's biggest markets and crops, such as cereals in Ukraine, soybean in Argentina, and corn in Indonesia.

Our focus in this region remains on arable crops, however we always consider and nurture opportunities in specialty crops, which are a part of Belchim's DNA and well served by the valifenalate family of products. A lot of R&D work is also now being done on biorational products, which will be an important addition to the portfolio in the future.



"In 2021, the overall Asian crop business continued to be affected by Covid 19 pandemic as well as supply disruption. Despite that, Belchim continues to make nice inroads into the region by successfully gaining product registrations and label expansions, and enlarging development footprints in the region. We are expecting nice sales growth in the years to come."

Chee Yong Liew, Business Development Manager Asia

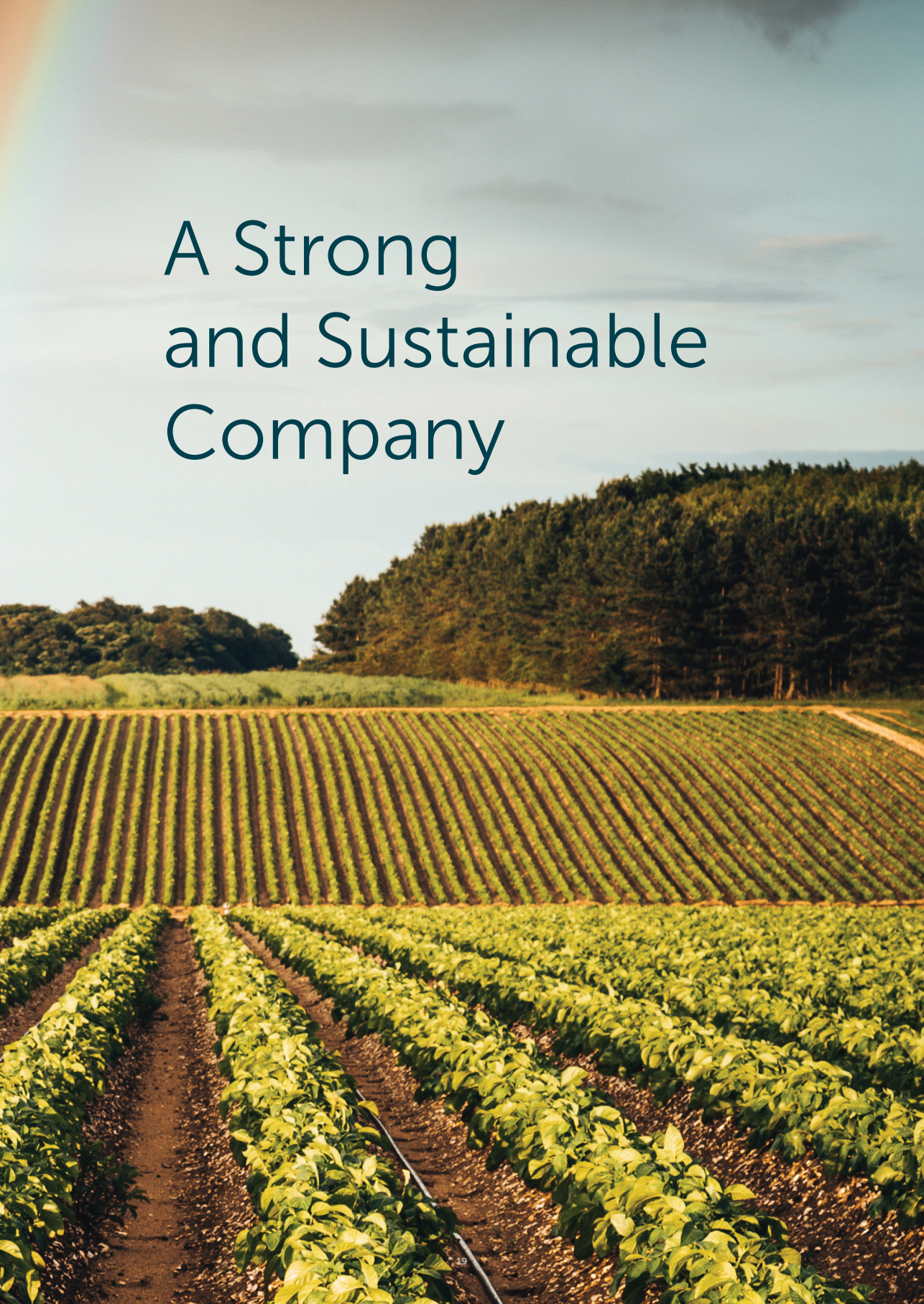


"Despite Covid challenges, we had a successful launch of Botiga, our corn herbicide, in the huge Ukranian corn market (4.5 million hectares), with a bright perspective to achieve a significant market share. Also, sales of our Proman 600 herbicide continue to grow and win market share, by fully satisfying farmers' needs in the huge sunflower market (6.3 million hectares)."

Alex Yakubets, Country Regional Manager, Ukraine



A Strong and Sustainable Company



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Phase 1: 1987-2000

Distribution of innovative products

Phase 2: 2001-2005

European expansion

Phase 3: 2005-2015

Regulatory know-how & own molecules

Phase 4: 2015-2020

Global expansion & improved structure

Phase 5: 2021-2027

New shareholder, innovation & biologicals

The Evolution of Belchim

Phase 1: 1987-2000 – Distribution of innovative products

Soon after its founding, Belchim began to distribute innovative and patented products, eventually becoming the European distributor for ISK and FMC (who both became shareholders in the company).

The focus during this period was on developing a portfolio of innovative, proprietary products.

Phase 2: 2001-05 – European expansion

Belchim had begun in Belgium and relatively quickly expanded into the Netherlands and France. As the portfolio and technical expertise further developed, Belchim began its European expansion – gradually building a sales organisation in all key European markets.

Phase 3: 2005-15 – Regulatory know-how & own molecules

Belchim broadened its focus and added the development and registration of innovative, proprietary products to its distribution. The European regulatory environment is complex and Belchim began to build up the skills and capabilities to manage its own regulatory dossiers. During this period, Belchim took another big step – acquiring five of its own innovative molecules.

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Phase 1: 1987-2000

Distribution of innovative products

Phase 2: 2001-2005

European expansion

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Phase 4: 2015-2020

Global expansion & improved structure

Phase 5: 2021-2027

New shareholder, innovation & biologicals

The Evolution of Belchim

Phase 4: 2015-20 – Global expansion and improved structure

Having established a strong presence in Europe, Belchim began to look outward. In order to take a strong position in North America, it acquired established US and Canadian companies. It began the process of developing and registering its own five molecules in more than 50 countries around the world, also establising a rep office in South East Asia. During this time, the company also went through an internal restructuring, after the sad passing away of the founder and CEO.

Phase 5: 2021-27 – New shareholder, innovation & biologicals

Belchim welcomed a new majority shareholder in April 2021, Mitsui Agrisciences International, further enabling its focus on innovation and growth. Alongside its sister company, Certis Europe, particular focus will be on two strong sources of innovation in the crop protection sector: Japan and biologicals. Belchim and Certis will remain focused on maintaining their top technical expertise across all crops and segments, in order to maximise the value of each molecule in their portfolio.

- **Location of headquarters:** *Tokyo*
- **Number of offices globally:** *131*
- **Number of subsidiaries:** *504*
- **Number of employees:** *43,509 (on consolidated basis)*
- **Global revenue (March 2021):** *US$ 72.2 bil*



Joining the Mitsui family

Belchim is now a proud member of the Mitsui & Co. ("Mitsui") family. Mitsui is one of the leading Japanese trading and investment companies, with a rich history – having been established in 1947 – and with an impressive presence in many of the global economy's most important sectors.

Mitsui's activities are spread across 16 business units, which include Energy, Mineral Resources, Machinery, Nutrition & Agriculture etc. The uniqueness of Mitsui's business model lies in the creation of added value by combining investments and trading, and by utilizing accumulated expertise in each industry and their associated business assets.

Belchim's new shareholder is Mitsui Agrisciences International ("MASI"), which belongs to the Nutrition & Agriculture business unit. The mission of MASI is to contribute to sustainable food supply and agriculture industry through science, with a recognition that the crop protection sector has an important role to play.

MITSUI & CO.

For more information on Mitsui & Co's businesses visit, **www.mitsui.com**

Mitsui has been steadily growing its presence in the global crop protection sector over the past twenty years, together with valued and trusted partners, based on a long-term commitment to the industry. The inclusion of Belchim in the Mitsui family is a logical fit, given Belchim's commitment to a sustainable food supply and agriculture industry and history with Japanese R&D suppliers and shareholders.



Mitsui is committed to supporting Belchim in continuing to develop products that the market needs and to develop talents with excellent technical knowledge and expertise in the industry. The high degree of affinity and complementarity between Mitsui's existing businesses and Belchim means that there is outstanding value to be unlocked.



The Direction Committee



Patrice Cauchy
Director R&D

Herbert Peumans
Sales Director North & West

Charis Van Dijc
Corporate HR Mar

Jean-Marie Sol
Director Market Management & Marketing

Frederic Charpentier
Sales Director South & East

All members of the company's Direction Committee embody the values of Belchim and use their individual expertise and experience to guide the company towards its stated mission. Between the directors there are decades of experience within the agricultural industry, across various levels of the value chain and in many countries throughout Europe.




CO_2

A Sustainable Approach

A sustainable approach to agriculture is crucial to ensuring that natural resources can meet the increasing food needs of a growing population, now and well into the future.

The **European Union's Green Deal** has established Europe as a leader in sustainable agriculture and defines several targets that will have an impact on the agricultural industry broadly, and the crop protection sector specifically.

Farm To Fork 2030 Targets,
part of The European Green Deal

The Commission will take actions to:

- **reduce by 50%** the use and risk of chemical pesticides by 2030.
- **reduce by 50%** the use of more hazardous pesticides by 2030.

The excess of nutrients in the environment is a major source of air, soil and water pollution, negatively impacting biodiversity and climate. The Commission will act to:

- **reduce nutrient losses by at least 50%,** while ensuring no deterioration of soil fertility by 2030.
- **reduce fertilizer use by at least 20%** by 2030.

Organic farming is an environmentally-friendly practice that needs to be further developed. The Commission will boost the development of EU organic farming area with the aim to achieve 25% of total farmland under organic farming by 2030.

Belchim, as a member of the Mitsui family, is in a strong position to help farmers and other stakeholders to meet these targets. Sustainability is embedded into Belchim's strategic and operational activities, and can be summarized into three broad categories: product portfolio, product application and business operations.

Product Portfolio

- Developing products with favourable eco-toxicological profiles that meet increasing EU regulations and contribute to the Farm to Fork strategy target of reducing the use of hazardous pesticides by 50%
- Developing biological products, which are suitable for organic farmers, as well as conventional farmers, and meet increasing requirements of stakeholders in the food chain
- Focusing on concentrated, high-quality formulations, which decrease volume of product required



Vintec® is a bio fungicide based on the specific Trichoderma strain named SC1, isolated from hazelnut plant tissue. Belchim Crop Protection first launched Vintec against Esca wood disease in vineyards and vine nurseries, and it has since been further developed into additional crops and segments, such as indoor tomatoes against Botrytis.

Product Application

- Providing advice on optimal product application, to ensure products reach their targets and to protect the surrounding environment and farmer health
- Working with researchers on Integrated Pest Management, to ensure products can be used without adverse effects on beneficial organisms
- Developing spray programs that ensure residue levels remain well below mandated levels from governments and the value chain
- Engaging in precision agriculture projects; this new technology allows for more precise application

Ecorobotix has developed an innovative technology to allow for smart and ultra-localized application of herbicides based on weed visual identification (machine learning) and the selective spraying of 1 or 2 herbicides on targeted weeds only. The Ecorobotix technology leads to a significant reduction of the amount of products sprayed per hectare. Belchim has been collaborating with Ecorobotix - its biorational herbicide, Beloukha, being included in several trials.

Business Operations

- Introduction of hybrid electric cars
- Reduction in paper use through increased investment in digital tools
- Solar energy at offices
- Improved analysis of supply chain flows to increase efficiency





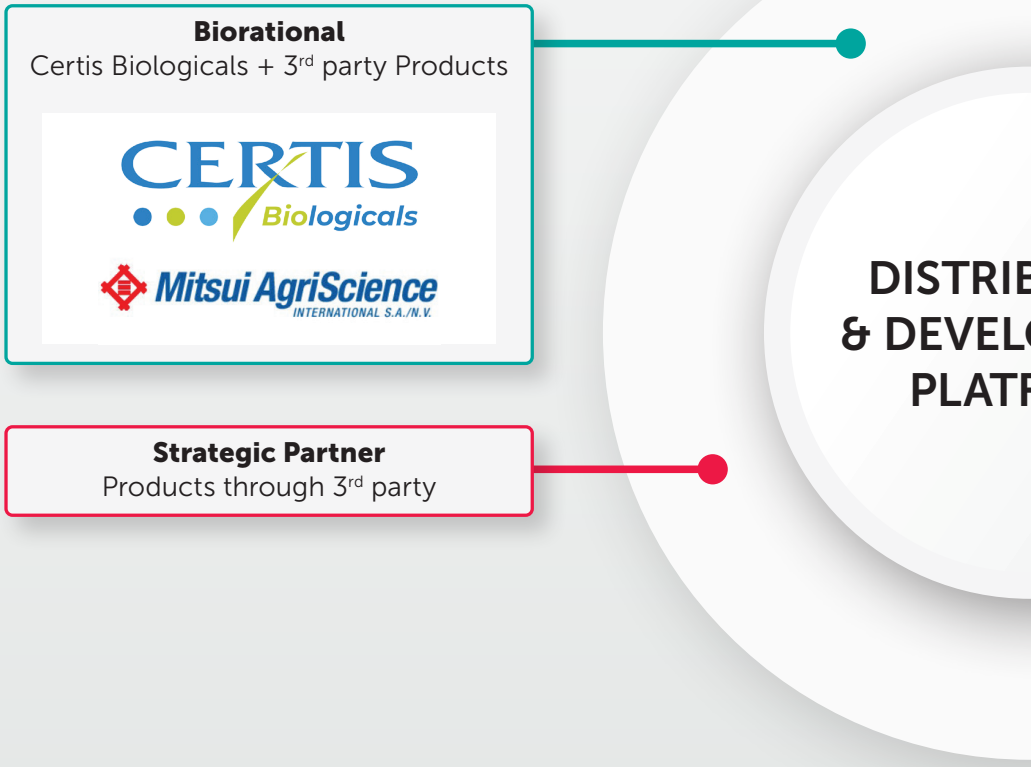


An Innovative Portfolio

Overview of the Portfolio Strategy

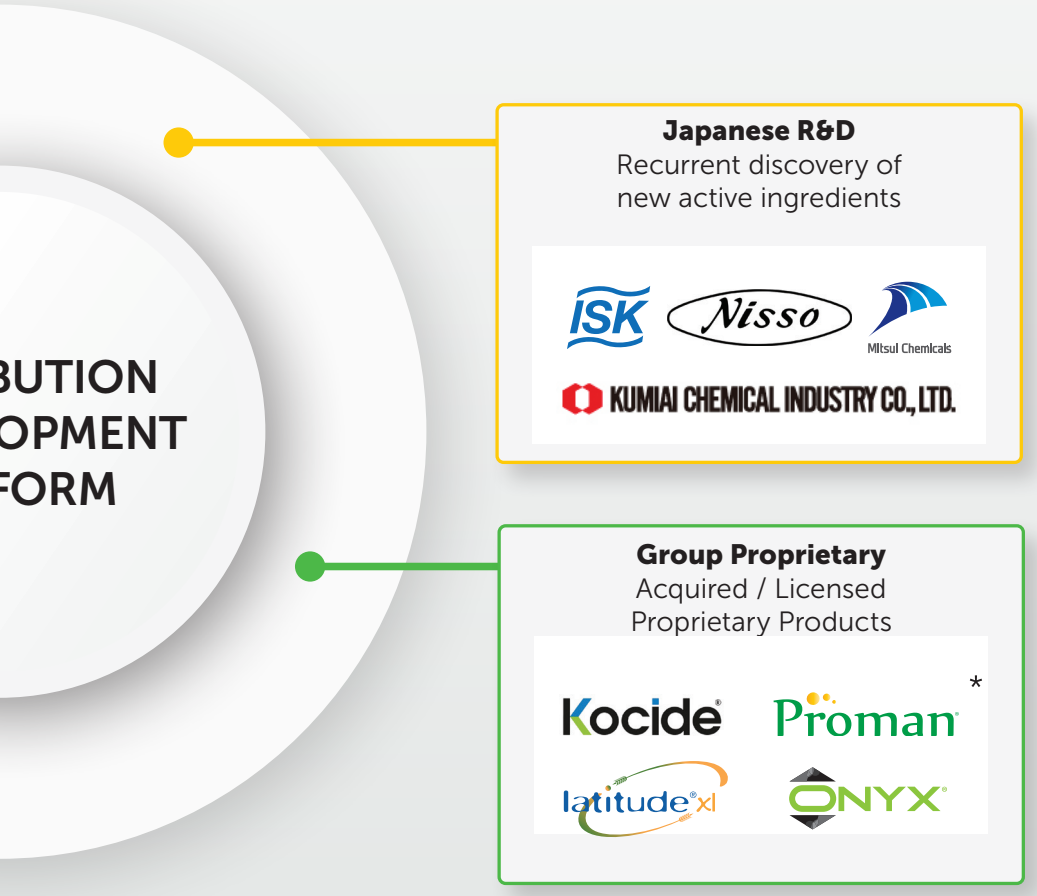
Mitsui´s portfolio strategy aligns closely with Belchim´s and is quite unique within the industry. Both believe in a platform approach, where the portfolio is comprised of products from various key sources, including trusted Japanese R&D partners, own acquired products, biorational companies and strategic partners, complemented with off-patent products.

Belchim enables the further implementation of Mitsui Agriscience's global Strategy



Belchim leverages its technical expertise to develop these products into complete offers that meet the market´s requirements. It then leverages its strong sales network to distribute the products and ensure that the potential of each of them is realized.

Both Mitsui and Belchim believe this platform strategy is a sustainable business model, and its continued success rests on the ability to align the interests of many stakeholders, requiring a unique spirit and skill set, both of which Belchim proudly possesses and continues to nurture.



* Latitude, copper fungicide, soil treatment, Metobromuron, Pyridate, Valifenalate, pelargonic acid

The Innovation Pipeline

The long development and regulatory timelines for the crop protection sector mean it is crucial that a robust pipeline of projects is maintained. This requires constant screening of opportunities, knowing that an idea that delivers good results in screening today, might not be available in the market for another 10 years.

Belchim is proud of its current pipeline of projects – not just because of its size, including 12 new active substances, but also because it is a pipeline that is aligned with the evolving needs of the farmer. Of the five products likely to enter the market in the next five years, two of them are biological, with the other two having strong eco-toxicological and residue profiles. Of the eight products being developed for market launch in six to ten years, six of them are biological.

Belchim's pipeline of new active ingredients

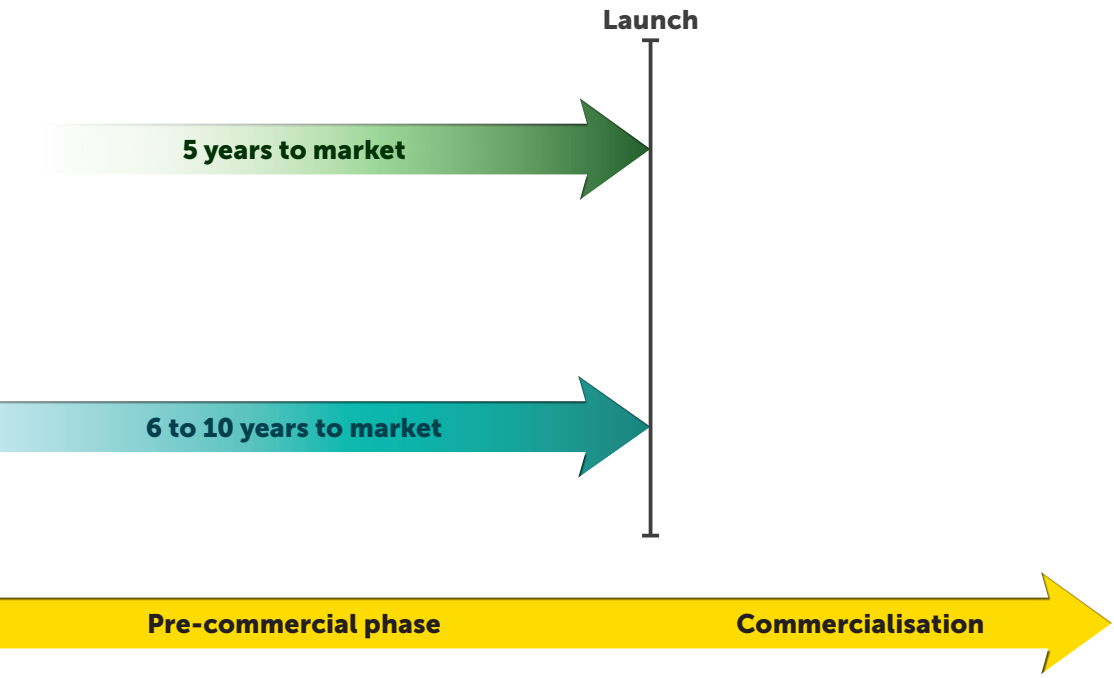
Segment	Crops	Conventional / biological
Herbicide	Speciality crops	Conventional
Fungicide	Vines, orchards, cereals, potato, amenities	Conventional
Fungicide	Vines, fruiting vegetables, orchards	Biological
Fungicide / Insecticide	Vegetables, orchards	Biological

Segment	Crops	Conventional / biological
Fungicide	Cereals	Biological
Fungicide	Multi-crop target	Biological
Insecticide	Multi-crop target	Biological
Fungicide	Multi-crop target	Biological

Development **Registration**

Belchim strongly believes it is important that projects are developed and registered close to the market, and collaboration between R&D, marketing and the sales organisation is crucial to ensuring that the solutions that end up ready for the market, are what the market needs. To foster this collaboration, Belchim has a function called Portfolio Management, with managers assigned to each product segment, acting as a bridge between functions.

In order to maintain a strong late-stage pipeline, Belchim invests significantly in the evaluation of many proposals for early stage projects, whether they be from third parties, new formulation concepts of existing products, or other ideas. For example, in 2021, 52 early stage proposals were received and reviewed; 22 biological products, 20 conventional products and 10 new formulation concepts.





Learning in the Lab and in the Field





Learning in the Lab and in the Field

The crop protection industry is inherently complex, given the large number of crops and pests (diseases, insects and weeds) and therefore the large number of active substances that it involves. On top of that, crop protection approaches are changing continuously, because of new conventional active substances and biological products.

Belchim, and its sister company Certis, have always understood the importance and value in continuously conducting trial work

- to understand how growing practices, pests and product performance are evolving
- to build internal product know-how
- to identify the ideal technical positioning for each molecule within the portfolio.

As a result, between the two companies there are now five research centers to enable a broad range of testing and trialling, covering various product categories and various crops.





Belchim Trial Station: Londerzeel, Belgium

- Applied crop protection solutions – with a crop focus on potatoes, corn, cereals and vegetables
- Laboratory screening of products and diseases (including resistance monitoring programs)
- Demonstration trials for customers and home of the annual Trial Field Day event, which hosts over 2000 customers
- GEP certified



Belchim Trial Station: Fronton, France

- Applied crop protection solutions – with a crop focus on vines, fruits and vegetables
- Demonstration trials for customers and home of the annual Trial Field Day event, which hosts about 300 visitors at the Fronton TFD
- GEP certified



Certis Innovation Center: Naaldwijk, The Netherlands

- Applied crop protection solutions – with a focus on protected crops
- Demonstration trials and customer-oriented research
- Training courses and workshops for customers



Japan Agro Services: Marguerittes, France

- Seed treatment formulation development and evaluation
- Biorational screening and early-stage assessment











Trial Field Days

The trial stations at a glance

	Londerzeel	Fronton
Total hectares planted	9.5	24
Number of crops	33	21
Top three crops	1. Potatoes 2. Vegetables 3. Cereals	1. Vines 2. Vegetables 3. Apples
Total number of **employees**	11	6.9
Number of **laboratory employees**	3	0.1
Total number of **field trials** conducted in 2021	67	85
Total number of **pot trials** conducted in 2021	34	0
Total number of **laboratory trials** conducted in 2021	54	13
Total number of visitors to **Trial Field Day events in 2021** (Covid constraints)	625	80





Sustaining Technical Excellence











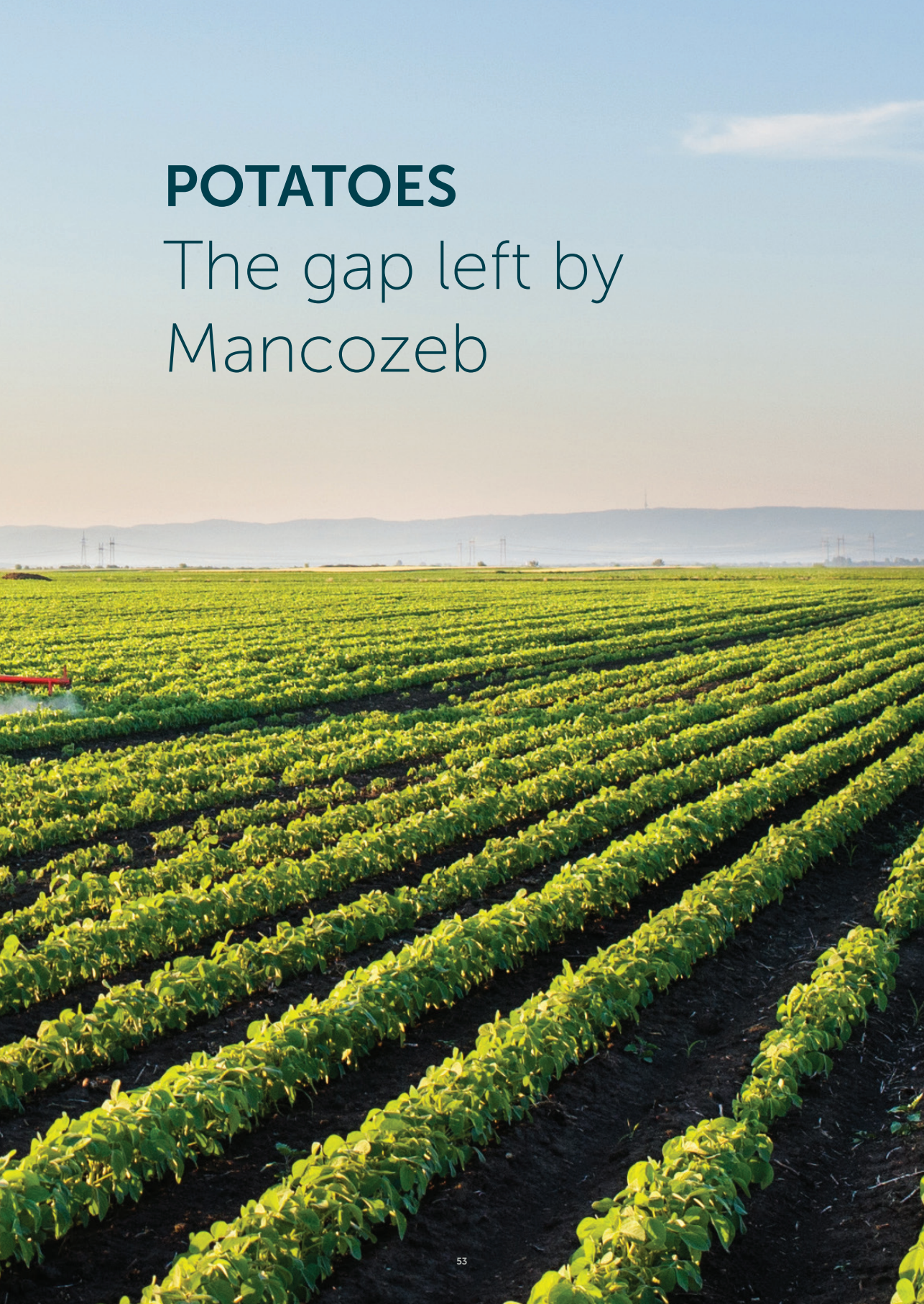
Technical excellence triggers innovation and drives growth

- Sustaining technical excellence is core to Belchim efforts to build an innovative and future-proof portfolio of products with a strong emphasis on biologicals.
- By developing a deep technical understanding of targeted crops and identifying the real farmer “pain points”, while gaining insights on key value chain demands and trends, Belchim is well positioned not only to address today’s problems but also to tackle the challenges of tomorrow.
- That "Boots on the ground and eyes on the horizon" attitude enables Belchim Crop Managers to lead the development of effective and competitive solutions to new challenges (resulting for instance from active ingredient withdrawals in the European Union) across its expanding geographic scope.
- In this section, you will discover vivid examples of how the "Belchim way" makes a real difference across its spectrum of targeted crops and countries.
- Biologicals is the fastest growing segment in the Crop Protection industry as the biorational products play an increasingly important role in the development of sustainable plant protection solutions and programmes, addressing farmers’ needs while meeting their key stakeholders’ demands. Certis Europe, a sister company to Belchim since the Mitsui group became its majority shareholder in April 2021, has been at the forefront of the development of the Biorational segment in Europe. An insightful article in this section unveils some of the reasons behind its success and highlights its strong technical and farmer-centric approach, which it shares with Belchim.
- If we also take into account the complementarity of their portfolios, it becomes clear that the Mitsui family umbrella will soon bring a number of business collaboration opportunities to Belchim and Certis Europe that will unlock tangible value for the farming sector and their downstream customers and stakeholders.



POTATOES

The gap left by Mancozeb





"What I will do now...the same as last year, I have already been working for three years without Mancozeb"

- Grower from Belgium

"We always start with Mancozeb! With two sprays we also provide sufficient Manganese to the young plants besides the Late Blight protection"

- Advisor from Lithuania

"We will use biostimulants or foliar fertilisers to compensate the missing Manganese and Zinc components we used to have with Mancozeb."

- Advisor from The Netherlands

"Mancozeb around flowering always gave a nice green and healthy looking canopy!"

- Advisor from Belgium

The gap left by Mancozeb!

Ed Bingham – Crop Manager Potato

2021 was a very difficult Late Blight season in many regions. The regular rainfall for sometimes exceptionally long periods made it very hard to control the very aggressive Late Blight. With this tough season still fresh in their memory, potato growers again face a huge challenge this year, as Mancozeb was banned in Europe from early January 2022. Looking at the quotes collected, there is no doubt that the ban on Mancozeb in potatoes will have a huge impact on the entire potato chain across Europe. However, a closer look at these quotes reveals some clear market trends which are important to keep in mind:

1. Mancozeb was appreciated for a lot of extra benefits besides its activity as a fungicide against *Phytophthora infestans*. Its good efficacy on *Alternaria* sp. and the extra supply of micro-nutrients (in particular manganese and zinc) were highly appreciated. This means farmers and their advisors need to adapt more than just their Late Blight control program. Customers are already working really hard on this.

2. Mancozeb had a multisite mode of action which was a cornerstone in anti-resistance management against Late Blight. It is expected that this will be covered by mixing single site products, but only time will tell what the impact of the loss of a real multisite mode of action will be against a highly diverse and dynamic pathogen like *P. infestans*.

3. Mancozeb was a very cost-effective solution. Many farmers worry about the increasing costs of potato production and the ban on Mancozeb will increase the cost of the fungicide program in potato. However, on this point it is important to keep the right perspective: even the smallest Late Blight attack in the field will cost the farmer much more than the extra money he would need to spend on replacing Mancozeb!

What will fill the gap?

Market data indicate that with the ban on Mancozeb there will be a super developed area of ± 3 million hectares which will need an alternative solution. Looking back at the different key buying factors of Mancozeb in the quotes, one can already conclude that these 3 million hectares will be replaced by several other solutions. To assess what can fill this huge gap, it is necessary to understand who is deciding what to spray on the field. Here three major parties who influence the product choice can be defined: the farmer, the distributor and other influencers. All three categories are driven by different goals and are trying to meet their own objectives when building a Late Blight program.

THE FARMER: In general farmers have two main drivers: minimizing the cost per hectare and avoiding the risk of having bad results. Minimizing the cost does not always mean spraying the cheapest products. For farmers, Late Blight control is like an insurance: every farmer has a certain risk-profile and will build his program in line with the risk he is willing to take. In general farms tend to avoid all kinds of risk as much as possible and for crop protection this translates itself into using products they have already known and trusted for many years. This last driver cannot be underestimated and is often the reason why new solutions are not taking big market shares in the first season(s) of introduction.



THE DISTRIBUTION: For many distributors the dark cloud of the Mancozeb ban comes with a bright silver lining. Due to the loss of Mancozeb, building a bullet proof Late Blight and Early Blight program becomes more technical again. For many distributors giving the best technical advice is an important driver as it creates a strong and reliable professional relationship with the farmers. It goes without saying that they prefer this over hard commercial discussions. For a potato specialist like Belchim, this brings valuable opportunities. The best technical advice in combination with the large portfolio in potatoes, makes Belchim the go-to company to discuss the new programs. Many local teams are already noticing an increased demand for technical potato meetings. Here not only Ranman Top but also products based on cymoxanil and fluazinam come into play as mixing partners for other products in customers' programs. Renewed interest in the "old" molecule fluazinam is especially worth mentioning here, because Belchim keeps on generating data and information on how to use the "old" fluazinam in a "new" phytophthora landscape. This has reflected already in strong fluazinam sales for some countries in the tough Late Blight season of 2021. On the commercial side, distributors also see opportunities to increase their turnover and margin as Mancozeb-based solutions were in general the cheapest and least profitable (see also table 1: example from the Netherlands market data).

OTHER INFLUENCERS: This last group is very diverse and surely a group to keep an eye on. There are many important influencers who interfere in the classical decision process of farmers and their distributors. The processing industry is particularly important as it is increasingly putting specific demands on the farmers' shoulders to address downstream requirements driven by consumers' expectations. At the same time, they will influence farmers in order to be able to buy quality potatoes at the lowest price possible. Depending on the country there is also strong influence from the authorities. This can take many forms, such as national legal restrictions, specific tax systems or a strong independent advisory system. Finally, farmers influence each other on product choices and sometimes this can be the strongest influence of all.

By analysing all these drivers and influencers and understanding how they interact, Belchim can present its solutions and value propositions in a compelling way, clearly showing that its portfolio includes very suitable products to fill the big shoes of Mancozeb.



Belchim can fill the gap!

When one takes an in-depth look at the market, it is clear that Ranman Top® ticks many boxes and is one of the major potential solutions to replace certain Mancozeb treatments. But also, with Cymbal® (cymoxanil) and Kunshi® (cymoxanil+fluazinam), Belchim has many good cards to play in order to fill the Mancozeb gap.

When it comes to trust in well-known products, Ranman Top is probably one of the highest valued products in the Late Blight segment. Its stable performance for many years and excellent tuber protection are well known to every farmer. For Belchim, it will be critical to maintain this awareness and confidence in Ranman Top moving forward.

Also, at distribution level there are opportunities for Ranman Top. However, here a sound commercial approach will be very important to convince the key channel players. To gain distributor support, the Ranman Top offer can be diversified to better meet their needs. This can be achieved with extra brand names, packs, and other solutions and is very specific to each country market. At the same time this diversification is a useful tool to protect the market share of Ranman Top from being eroded by the future entry of generics. Needless to say, this is high on the agenda of both Belchim and its key strategic supplier and shareholder, ISK Biosciences.

Besides setting out actions at farmer and distributor level, keeping track of the market influencers is also an integral part of a solid marketing strategy. In order to do this, Belchim will make optimal use of one of its core principles: keep the boots in the field! This is the only way to understand, in all the different potato markets, how decisions are actually taken in the field and how to bring concrete added value to farmers, customers and key stakeholders and positively influence them. Getting to know the influencers and trying to convince them that Belchim has the best portfolio to fill the gap left by Mancozeb will be one of the key objectives for 2022.

So, by creating demand at farmer level, diversifying the offer at distribution level and convincing the influencers at stakeholder level, Belchim hopes to get the entire potato chain on board, placing its trust firmly in the knowledge and the portfolio the company has built step by step over the last decade.



Loss of Mancozeb can increase the value

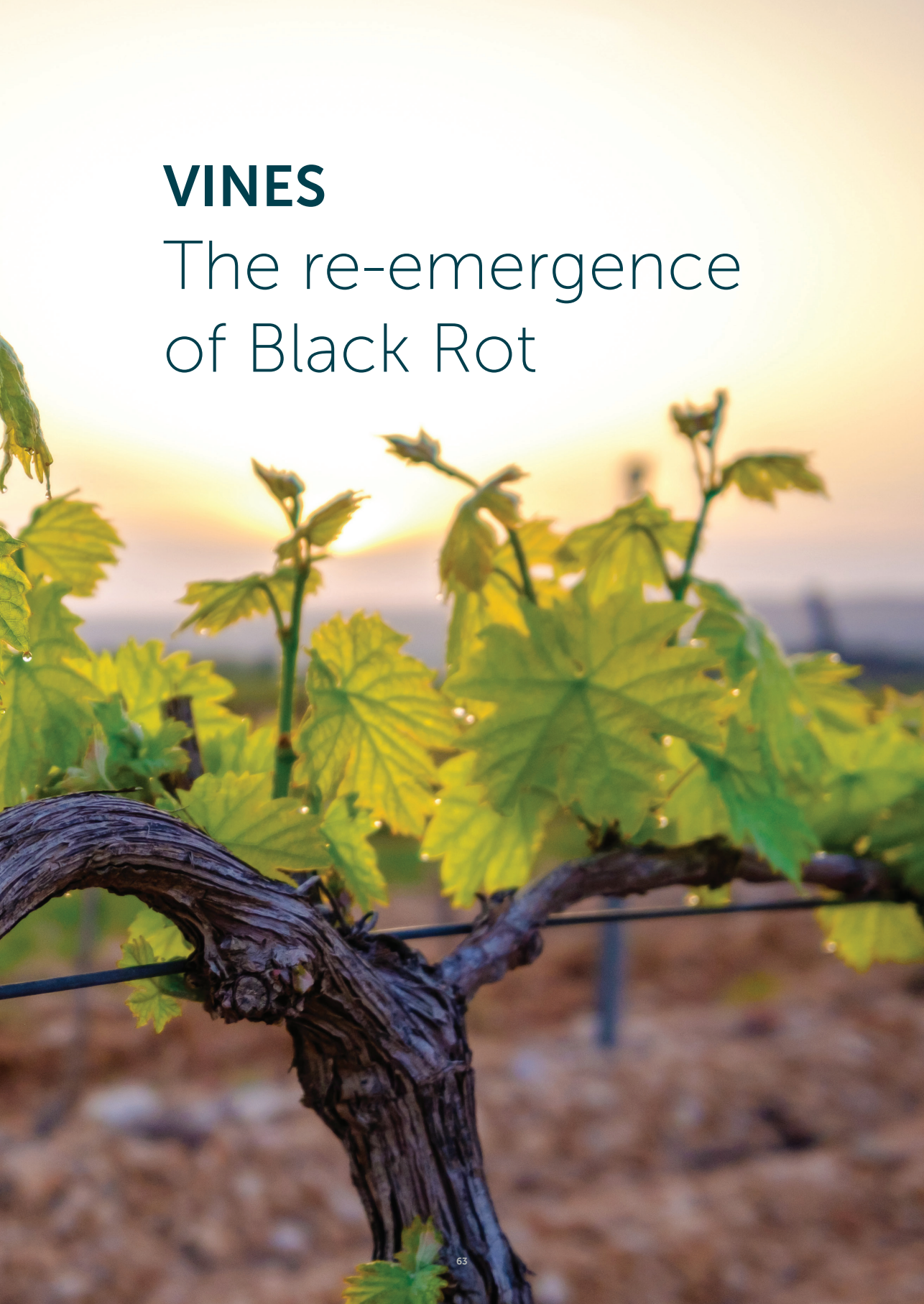
PHYTIN + ALTESS program (*Phytophtora infestans* and *Alternaria* sp.)	**2016 (wet)**	**2020 (normal)**
Area grown(ha)	157,600	165,600
Area treated (ha)	155,700	159,100
SDA (ha)	2,648,300	2,148,400
SDA Mancozeb (ha)	651,262	612,900
# products total	**17.0**	**13.5**
# products Mancozeb	**4.2**	**3.9**
Value total (€)	€ 53,548,000	€47,496,364
Value Mancozeb (€)	€ 11,780,000	€10,882,000
Cost per ha (€/ha) (based on treated area)	€ 344	€ 299
Mean cost per ha per product (based on SDA)	**€ 20.22**	**€ 22.11**
Mean cost per ha Mancozeb product (based on SDA)	**€ 18.09**	€ 17.75
Mean cost per ha other products (based on SDA)	€ 20.91	**€ 23.85**

example from The Netherlands

These market data from The Netherlands show the value of Mancozeb in one of the major potato growing countries. On average four sprays will need to be replaced and the cost per ha will probably increase significantly.



VINES
The re-emergence of Black Rot





A major fungicide market: the re-emergence of Black Rot in vines

Emmanuel Archer, Crop Manager Vines

In Europe vines are grown on around 3.2 million hectares. The two main diseases affecting vines and requiring treatment wherever grapes are grown are Downy Mildew (caused by *Plasmopara viticola*) and Powdery Mildew *(Erysiphe necator)*.

- Downy Mildew has a super developed area (SDA) in Europe of 18 million hectares (equating to around 5.6 treatments annually per hectare).
- Powdery Mildew has a SDA in Europe of 17 million hectares (meaning an average of 5.3 treatments annually per hectare).

In recent years, a variety of factors has led to an increase in secondary diseases:

- Climatic conditions: alternating storms, heavy rain, humidity, high temperatures.
- The banning of active ingredients (a.i.) and even withdrawal of complete a.i. families.
- Switch to organic production: some diseases are not totally controlled by organic products or active ingredients.

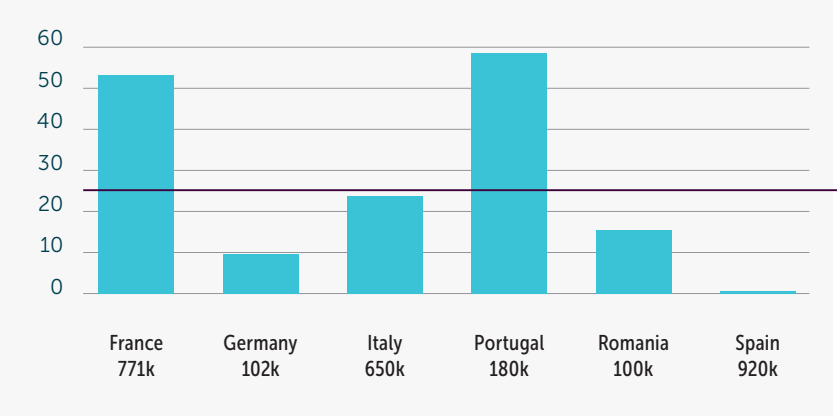
As a result, **Black Rot**, *"Guignardia bidwellii"*, an old disease that had appeared to be dormant, re-emerged to become a major threat for winegrowers.





Black Rot is one of the most important secondary diseases, with more than 25% of the vine area across Europe now affected (810 000 hectares). Though its incidence varies from year to year, the average SDA treated annually against Black Rot in Europe reaches around 4.5 million hectares.

Percentage of vine area affected by Black Rot



The impact of the re-emergence of Black Rot

This disease was first seen in 1804 in Kentucky, North America, and arrived in Europe in 1886, when the first incidences occurred in the South East of France. Depending on the year, this disease can completely destroy the grape bunches unless effective protection is applied.

To protect the bunches and the leaves, growers used to rely on the secondary effects of different products already being used for the control of Downy Mildew and Powdery Mildew, such as Mancozeb, Folpet, Metiram (Downy Mildew products) and DMI, QOI, SDHI (Powdery Mildew and Botrytis products).

Since 2018, many areas across the whole of Europe have been badly affected, due to the withdrawal of active substances and/or the changes in vine protection strategies.

- Mancozeb ban: 2 million hectares of Black Rot protection need to be replaced.
- DMI ban: 580,000 hectares of Black Rot protection need to be replaced.
- Folpet restriction: Integrated Pest Management (IPM) in Italy, restriction in Germany, prohibition in certain areas of France due to the H351 statement, restriction on chemical active ingredients in Czech Republic.
- Lack of effective solution in organic production.

Black Rot, alias *Guignardia bidwellii,* attacks the leaves from BBCH 11 (first leaf unfolded) to BBCH 69 (the end of flowering) and subsequently impacts the berries from BBCH 61 (flowering) to BBCH 79 (the majority of berries touching), so the protection applied needs to be effective for 85% of the spraying period.

Rain (as little as 0.3 mm) and humidity (> 90 % during six hours) both play a big role in the development of Black Rot.

Black Rot is the most significant top of mind secondary disease for vine growers.



Belchim solutions

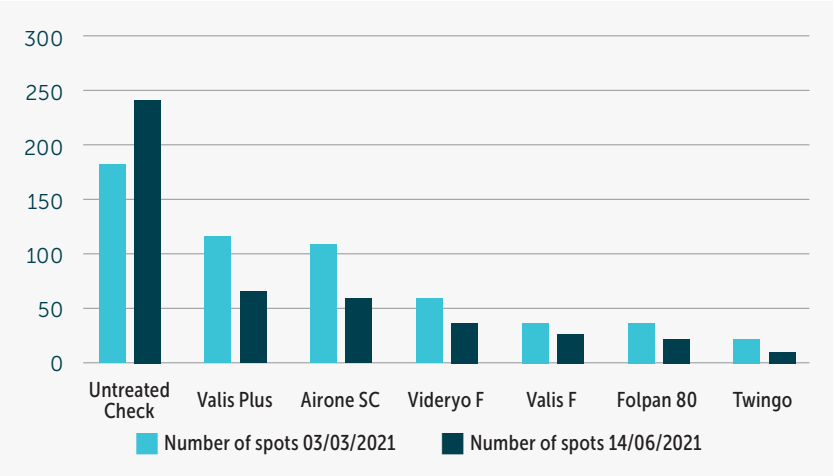
To help develop effective solutions against Black Rot, Belchim has been testing a number of its products, some of them in combination. Several trials have been undertaken using some of the current Belchim products:

- Twingo® (cymoxanil + folpet)
- Videryo® F (cyazofamid + folpet)
- Airone/Griffon (copper)
- Valis F® (valifenalate + folpet)
- Valis plus® (valifenalate + copper)

Results are really promising on the leaves, where chemical solutions performed well. A copper solution with organic multisite activity provided some control of the disease. It can be combined with a Powdery Mildew product that is effective on Black Rot to deliver a good level of control.

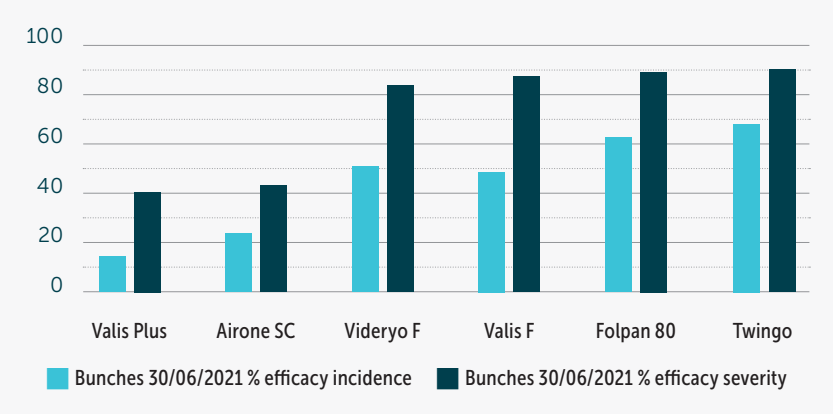


Efficacy trials of Belchim portfolio against Black Rot on leaves

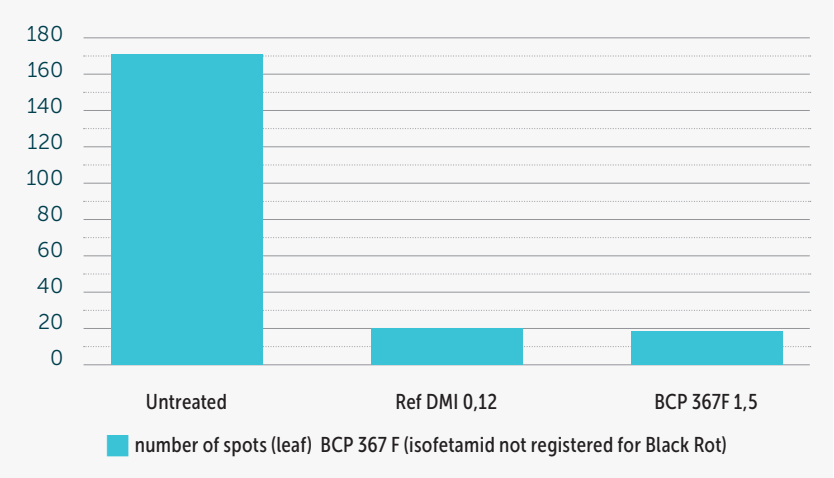


Similar results were recorded on the bunches. In the chart below efficacy incidence refers to the percentage of bunches affected whilst severity results record the percentage of berries affected on the bunch.

Efficacy trials of Belchim portfolio against Black Rot on bunches

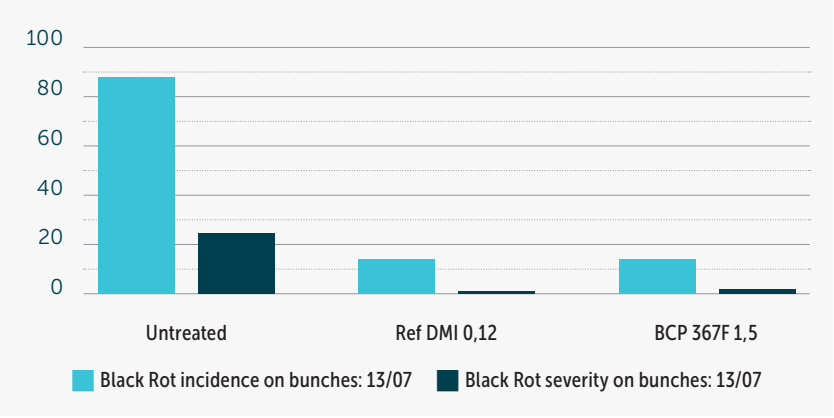


Efficacy trials of Belchim portfolio against Black Rot on leaves



Trials were also conducted to check the efficacy of solutions already registered but not on Black Rot. These produced good results, showing strong performance on leaves and bunches, equivalent to or better than the reference.

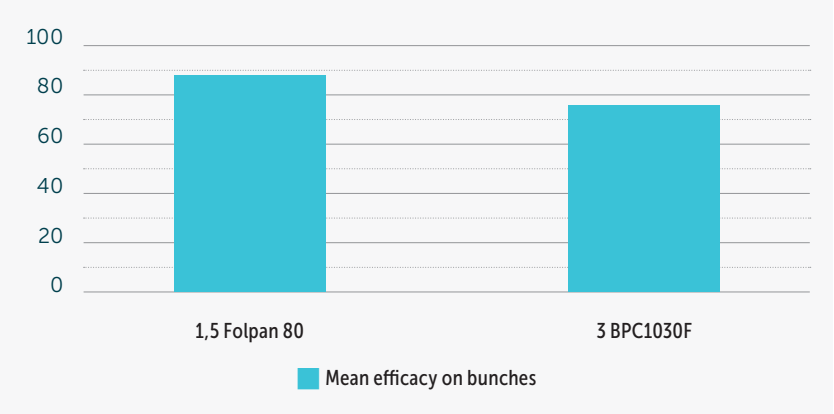
Efficacy trials of Belchim portfolio against Black Rot on bunches





Efficacy trials of a Belchim late pipeline biorational product against Black Rot on bunches

In addition, a new biorational product in development, BCP1030F, shows promising results.



Belchim has a comprehensive portfolio which delivers effective solutions against Downy Mildew and Powdery Mildew, through a combination of biorational and conventional products. Importantly, as the trials presented here have shown, some of these solutions will also provide effective protection against Black Rot, thereby ensuring a good harvest and quality wine production.



Fronton

Every year Belchim Crop Protection organises an event in the vineyards at the Fronton Research Station to present the various trials in progress using the products from its portfolio.

This is always a special day for the Belchim team to spend time with the local winegrowers, vineyard leaders and technicians. The meeting is dedicated to sharing experience, understanding needs and expectations and proposing new solutions.

During the Trials Tour on 21st July 2021 the guests were asked to focus on their needs, specifying issues with which Belchim could help them.

Emmanuel Archer, Crop Manager, asked:

"What is really important for you to see today, how can I help you to manage specific issues or diseases?"

Matthieu Portelli, a winegrower with 120 hectares, joined the discussion:

"To be honest, we spend a lot of time in the vineyards and we are expert on the main diseases, but due to bans on the use of a number of actives, new specifications from our cooperatives(*) and consumers, we face a big issue with Black Rot. Even growers who start planting grape varieties resistant to Downy and Powdery Mildew, need to spray against this disease, so if you have anything to show us relating to this disease, that would be perfect."



Mr Portelli checking the bunches treated with Kenja during the trial visit

Emmanuel Archer:

"As Belchim has been working in the Fronton vineyard for five years, I can understand your needs. We have several trials looking at treatment for this disease, with innovative protocols and active ingredients.

Belchim has products registered against Powdery Mildew and Downy Mildew, and even new actives that also bring control of Black Rot .

If we include them in a treatment program, similar to that you currently use during the season, you will see the brilliant effect.

Let's go and have a look."

After the tour in the vineyard

Matthieu Portelli:

"It is truly amazing to see products used in real conditions, bringing real synergy, efficacy and a new way of thinking. Also the future seems bright for new actives from your portfolio:

Secondary effects of lots of combinations or straight products give perfect control against Black Rot.

Some products are of course not perfect, but can be included in our programs, to replace banned actives without major disease problems.

We have seen a nice overview to help us to work out our treatment scheme for the next few years."

Emmanuel Archer:

"From our side, the target is to think inside but also outside the box, not giving advice but showing the reality of disease treatment applications through the season and helping you to make good choices by applying the right product at the right moment. We hope this overview will give you the opportunity to choose the right product against Black Rot but also other diseases."

Matthieu Portelli:

"Thanks a lot. I hope next year we shall once again be able to share our point of view and see the Belchim approach, which includes the reality of our situation and needs."

Emmanuel Archer:

"Now we will taste some bottles of Fronton together, because we always need to have in mind the final product 😀"

(*) From 2021 , Vinovalie Cooperative Cellar will not accept any grapes treated with products containing carcinogenic, mutagenic or reprotoxic active ingredients.





Amenity, Home & Garden, Industrial & Railway: growth opportunities











Amenity, Home & Garden, Industrial & Railway: Growht opportunities

Laurent Darthout, Marketing Manager AHGIR

Defining the path forward in Home and Garden

The value of the EU plant protection market in Home and Garden reached 350M€ at end user level (anti-slugs included). Of that, herbicides represent roughly 50%. France remains a key country as its herbicide market is worth around 70M€ with only 'natural' products registered. It is a market in which Beloukha® Garden, Belchim's herbicide based on pelargonic acid, fits well. In this country, it maintains a high market share (36%) with the ultraconcentrated formulation among the other 'natural' concentrates and Ready-to-Use products. 2021 was a good year for this market probably largely because, due to lockdown effect, people travelled less and spent more money in their garden.

The way forward in Europe is clear: the focus should be on products with favourable toxicological and ecotoxicological profiles and preferably on biorationals. It is clear from the above figures that herbicide represents the largest part and that Belchim should focus on that, still investing time in developing a new generation of 'nonanoic acid' formulations, but also looking for natural weedkillers with residual or systemic activity. For insecticides and fungicides, 'polyvalent products' with a broad spectrum must be developed, as an amateur gardener generally has no deep technical knowledge and will only purchase a limited number of products for her or his garden.



Growth perspectives in Amenity

The 2021 season was better than 2020, the latter being characterised by stock piling due to Covid and the passivity of municipalities. Sales grew by 6% in Europe despite strong competition based on fatty acids and acetic acid-based products.

Cities are under societal and political pressure:

- On one hand, they are worried about letting their employees go outside with a knapsack sprayer on their back. Whatever the product it contains, citizens link a knapsack to pesticides and to danger, especially in public areas like parks where children can play.
- On the other hand, there are some places like cemeteries that citizens like to keep clean.

As mayors are also under political pressure to replace glyphosate, there is still some space to grow and good prospects to continue the development of Katoun® Gold and Chikara®/Katana® sales.

Turf, especially sports courses, is a segment which needs good protection against pests like chafer grubs, leather jackets and against diseases like Dollar Spot and Fusarium. It is a very technical market, a niche (roughly 6,000 ha of golf greens in Europe), but a high value one, making it completely different from agricultural crops and largely more profitable in terms of spend per ha. Here Belchim has promising projects in the pipeline, which fit with the demand and will benefit from a team dedicated to support them in the main countries.



Certis portfolio opportunities

Certis has a wide range of biorational products which match the key market trends. The damage caused by boxwood moth and the risk to human health generated by pine and oak processionary caterpillars (rashes, breathing problems and skin irritation) give an opportunity to the *Bacillus thuringiensis* range from Certis Biologicals (North America). Another opportunity is the maltodextrin active ingredient which could compete favourably with oils in the home and garden market. Here, aphids are the main target insects. Business opportunities are currently being assessed to prioritize the launches and ensure adequate support for the most promising products, fully leveraging the complementarity of the Certis portfolio to drive growth in the Home & Garden and Amenity segments.

The Biocide market is on the rise

This market is broad: it includes disinfectants, preservatives, pest control, antifouling products, and concerns both professional and amateur users. The market is increasing year after year. In 2021 it is estimated to have grown by 5%. Rats are a big concern as more and more people are moving to cities to work. The population of bed bugs is also expanding because of the internationalization of travel. Mosquito pressure is also rising due to global warming. Hence, all segments are growing and offer promising opportunities.

Enclean® and Enclean® RTU are currently in development against green algae with first success in UK, Scandinavia, Benelux. The old quaternary ammoniums still dominate the market because they are cheap and are also used as disinfectants (which was a key secondary benefit during the recent period with Covid). Nevertheless, more and more customers are looking for green solutions with a better profile like the Enclean range. Organic certification was obtained this year for Enclean in UK via OF&G and has been applied for in the EU via Ecocert.



Belchim is in a unique position to deliver future proof weed control solutions to the Railway sector

Weed control in railways is mandatory for stability of the railroad bed, visibility of signals, short breaking distances, avoidance of fires, and maintaining accessibility of emergency routes, while the speed of treatment is critical to avoid any negative impact of weed control on the railway business (high speed spraying is needed to leave the track free for passenger and freight transport).

Even this segment is under pressure regarding the use of glyphosate and therefore, some countries in the EU have already decided to stop its use. Several alternatives to this active ingredient have been tested: the most efficient, cheapest, fastest and safest for applicators remains spraying herbicides from running trains. Hence, the very good fit of Belchim's solutions based on pelargonic acid. In addition, these solutions should be mixed with residual herbicides to achieve the required long lasting effect.

All these elements make the outlook on this market very promising.

The railway company, CFL, in Luxemburg has already transformed its volumes of glyphosate into Katoun Gold and residual herbicides. SNCF, the French railway company, continues to switch to Belchim solutions. The last six years of close contact, trials and support to SNCF are paying off. Here, Belchim is doing much more than answering a tender and selling a product: providing services, helping to reduce the re-entry period which can have a huge economic impact if, for example, a waiting time of 24h or more is required after a treatment before work on a railway can resume. Belchim has also helped SNCF to address concerns that ultra-concentrated fatty acid formulations might turn to gel when outside temperatures remain close to 0°C for several hours. These ongoing efforts over the last six years have enabled Belchim to become a strategic SNCF partner in weed control.



Germany is also a key country: the parliament announced that the use of glyphosate will be stopped at the end of 2023. Some Länder have already done so. The German rail network and market is one of the biggest in the EU, equivalent to the French market. Hence, work on registering Belchim's specific railway formulation in Germany is underway. Certis Railservices has the team and the equipment to provide all the services required by the railway companies. Together, Belchim and Certis are able to offer an integrated solution including products, spraying and other weed management services. Since 2019, Certis Railservices has been collaborating with Zasso AG to adapt their innovative electro-weeding technology to railway applications. The tests done so far are really promising and currently the project focus is on obtaining registration of the technology in Germany.

Beyond the two major markets of France and Germany, further developments are foreseen in other countries of immediate interest: Croatia, Portugal and Italy, for which a pelargonic acid solution that can be used on railways is already registered.

In addition, registration of Katoun Gold in railways is expected in the EU Northern zone countries as of 2022.





ARABLE CROPS
The metobromuron growth story





The Metobromuron Growth Story

Gilles Deschomets, Crop Manager Arable crops

From an early start in Potato in Europe to Sunflower and Soybean in Ukraine and now to the world

The metobromuron active ingredient was acquired by Belchim in 2000 and was successfully listed on the EU Annex I in 2014 for 10 years. The first launch was Proman® in potato in several European countries in 2016. The second important step was the extension of use to soybean and sunflower in 2018 in several countries across Europe. Then, metobromuron was launched in Ukraine in 2019 and the focus is now to extend its market footprint to Africa, Middle East and the Americas.

As a result, Belchim is currently selling metobromuron in sunflower, potato, soybean and tobacco in the European Union and is planning to launch it in cotton. In the rest of the world crops targeted in the short term are soybean, sunflower, corn, potato, tobacco and cotton. In the medium-term the intention is to extend its use to vicia bean and sugarcane (screening trials are ongoing).













Metobromuron portfolio segmentation: solo formulations tailored to geographic market conditions

In terms of formulations, metobromuron 500 g/l, Proman, is currently sold in the European Union and in some African countries. Sales of the 400 g/l formulation, Fresco®, are limited to specialty crops in the European Union. The 600 g/l formulation, Sidoro®, is already sold in Ukraine and it will be introduced across Eastern Europe, Africa, Middle East and the Americas.

Metobromuron portfolio segmentation: ready-to-use mixtures to meet specific crop needs

Sinopia®, a ready-to-use mixture of metobromuron + clomazone, is already registered in some European Union countries in potato and the intention is to extend its use to soybean. The launch of this ready-to-use mixture is also planned in Ukraine, Africa, Middle East and the Americas with the same focus on soybean and potato. Simultaneously, in these regions, a ready-to-use mixture, metobromuron + S metolachlor, aimed at corn and sunflower will be introduced. These two ready-to-use mixtures will enable Belchim to tailor the value proposition to the specific needs of these two large, arable crop segments.

Growth dynamics in Europe

In Europe (European Union and Ukraine) sales volumes have been increasing steadily since 2016. Sunflower is now the first crop, followed by potato and soybean. Significant sales in grain and silage corn in Ukraine are also made. This growth is expected to continue in 2022 and beyond due to the extension of use to sunflower and soybean in new European countries and thanks to the overall strong response to effective commercial and marketing activities. Moving forward, the next important step in the European Union will be the renewal of the metobromuron active ingredient registration, foreseen for 2024/25. A reduction of the permitted dose per hectare is likely and work is currently ongoing to adjust the positioning, which includes identifying and testing potential tank mix partners for pre-emergence applications and pre-/post-emergence herbicide programmes.



Zoom on Romania

In 2021, Romania had record harvests. The country has a long tradition of cultivating sunflower and soybean.

The sunflower area in 2021 was 1.2 million hectares. With an average yield of 2.75 T/ha production reached very high levels, amounting to a total of 3.3 million tonnes and exceeding the 2020 harvest by 1.2 million tonnes. Romania ranks first in the EU with this output, accounting for 34% of the EU total production.

The soybean area of 164,000 ha, with an average yield of 1.86 T/ha, achieved total production of 306,000T.

"Proman herbicide very successfully controlled ragweed (a quarantine weed)."
– BCP Partner Donau Soja - Dragos Dima

"Metobromuron controls weeds effectively, even in drought conditions."
– Farmer South of Romania, 500 ha - Iulian Filipoiu-Netfarming

"Another reason we use Proman herbicide is that we have no problems with residues when growing wheat in the rotation after sunflower.
– Farmer West of Romania, 1,500 ha - Andrea Folegot-Agro Folegot



In North America, focus on glyphosate resistant weeds will unlock a large business opportunity potential

In the US and Canada, the metobromuron potential is currently being assessed, taking into account the specificities of the North American markets. First registrations will include soybean, sunflower and potato and are expected to be granted in 2025/26. Belchim's commercial focus will clearly be on soybean, with future plans for corn, cotton and tobacco. Several of these crops are GMO and resistant to foliar herbicides, which represents a major difference from the situation in the European markets. Nevertheless, the first analysis has confirmed significant market interest in metobromuron, especially to address the challenge with glyphosate resistant weeds.

Huge potential in South America

In South America, there is a huge potential for metobromuron, mainly in soybean but also in corn. Belchim does not sell product directly on this continent but through distributors. First sales of Proman are expected in 2024. Subsequent plans are to switch to two ready-to-use mixtures: metobromuron + clomazone and metobromuron + S metolachlor, in order to tailor the value proposition to specific crop needs, as in the USA. Soybean and corn varieties in South America are also GM herbicide tolerant. Consequently, metobromuron will target glyphosate resistant weeds. Overall, the business opportunity of metobromuron in South America is at least equivalent to its potential in Europe including Ukraine.

Developments via crop diversification in Africa and Middle East

In Africa, Belchim leverages the expertise gained in Europe (regulatory, product positioning) through close collaboration with distributors, starting with the introduction of the solo Sidoro product and planning the launch of the ready-to-use mixture, metobromuron + S metolachlor, in the mid-term. A broad set of crops is targeted: potato, corn, soybean, sunflower, tobacco, cotton. Additionally, Belchim is currently evaluating the opportunity to address the sugarcane market.

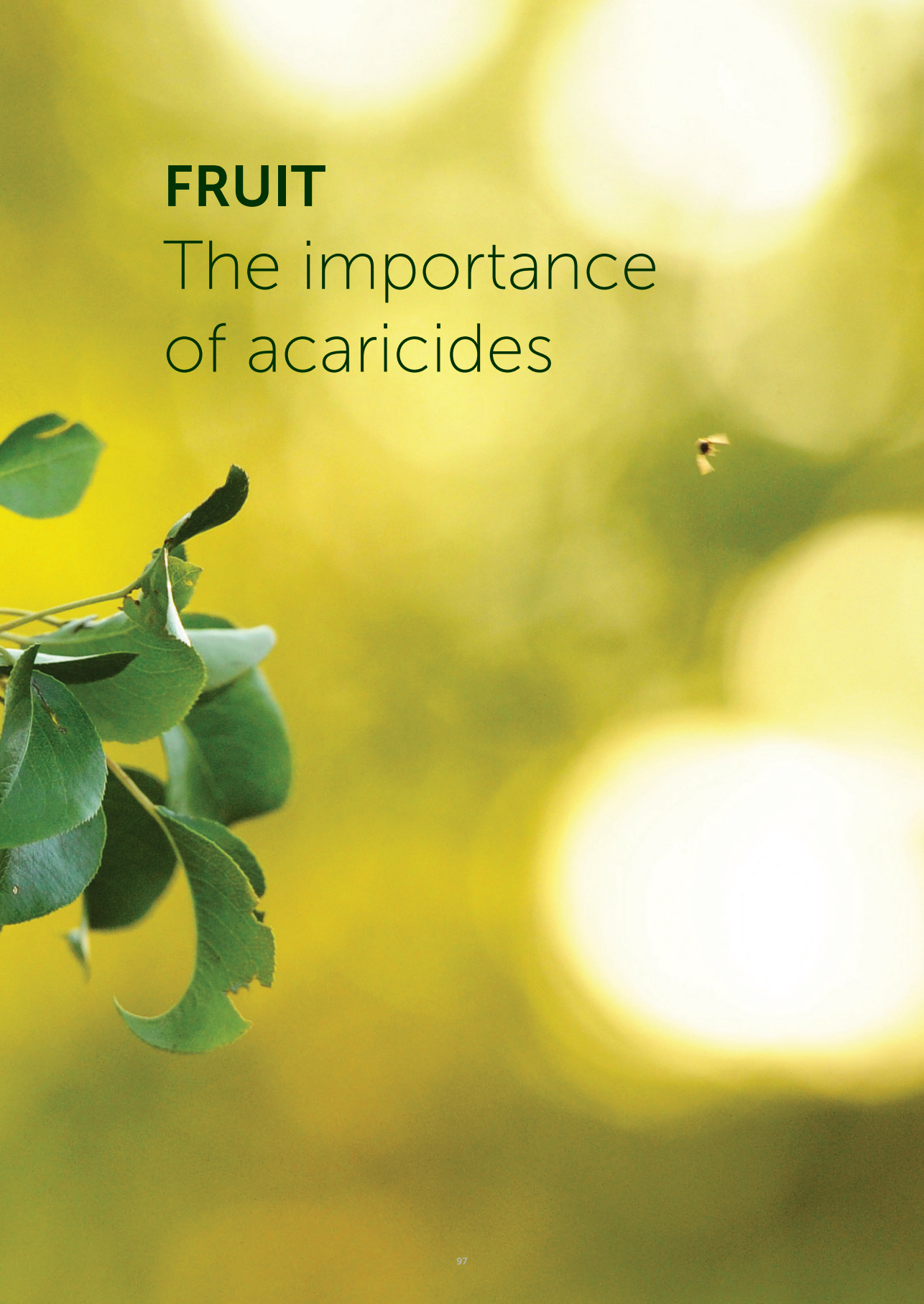
Significant contribution of metobromuron to Belchim business expansion

The future of metobromuron is promising and this active ingredient will undoubtedly become a key driver of Belchim business expansion in the years to come.





FRUIT
The importance of acaricides





The importance of acaricides in fruit production

Filippo Urbinati, Crop Manager Fruits

Mites are considered to be among the most dangerous of orchard pests. Every season a large number of species of phytophagous mites affect fruit plants around the world causing significant economic losses to growers. The application of acaricides is a critical tool in their control. In 2020 the acaricide market in Europe was worth around 100M€. Fruit, Vegetables and Vines represent almost 97% of total European acaricides sales. Looking more closely at the Fruit and Vegetables segment, the biggest market is in southern Europe with Spain and Italy reaching 63% of the total European acaricide market. The Netherlands and Germany are the most important markets for acaricides in Fruit and Vegetables in central Europe.

In terms of area, almost 65% of the EU super developed area (SDA) is in orchards and soft fruits (citrus, pome fruits, stone fruits and raspberries) confirming the importance of acaricides for fruit crops. Citrus represents by far the biggest market in Europe with 26% of the total European acaricide SDA. The European acaricide segment is quite a crowded one with numerous active ingredients registered. Nevertheless, the competitor landscape is changing with many actives facing regulatory limitations and some others already banned. This will create space in the marketplace and there will be growth opportunities for the reinforced Belchim acaricide portfolio, together with the Certis Europe offer.

Identifying mites attacking fruit crops

Damage from the various species of mites causes yield reduction and loss of quality in the crop. In addition, the mites can also be vectors of viruses. The remarkable destructive potential of mites is due to their very high reproductive capacity so, as well as species identification playing a very important role in the selection of the most effective control strategies, the recognition and control of the different stages of development is also crucial in reducing possible plant damage. The key distinguishing features are the shape, colour, size and mobility of the mites, though evidence of the damage they produce also contributes to recognition and identification of the specific species.

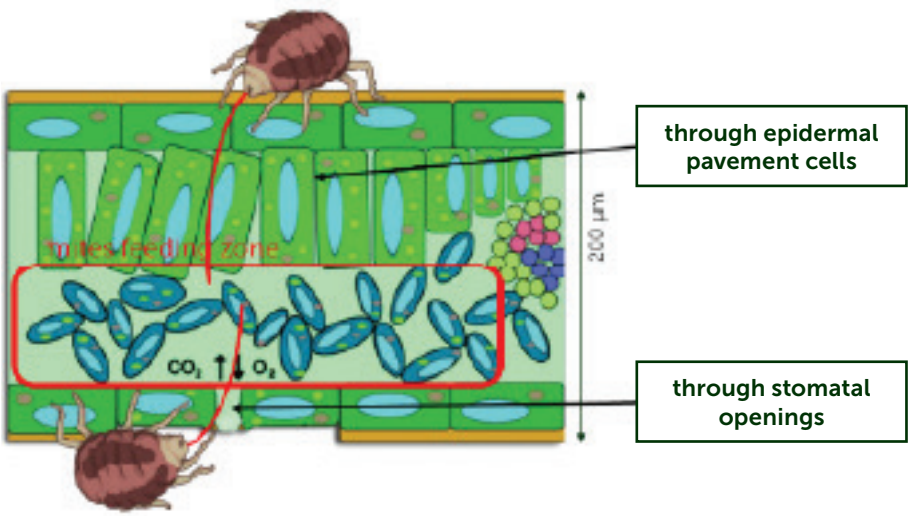
According to the *Identification guide: Mites and beneficials* by the University of Valencia (2017), among the most common sign of damage in orchards is the discoloration and yellowing of the green part of the plants caused by the feeding activity of the mites, producing lesions that lead to drying and wilting of entire parts of the plant.

Some mite species are strongly linked with specific plant species. As an example, eriophid mites can be identified just from the damage they produce on their host plants. In contrast, some other species are extremely flexible and can develop on different plant species. For example, *Tetranychus urticae*, commonly known as red spider, can attack and cause damage on a large number of different cultivated and non-cultivated plant species.



Mites' feeding and reproduction patterns

Mites have a unique feeding pattern that differentiates them from other cell content feeding arthropods: through their specific sucking mouthpiece, they stick on plant tissues to extract the sap. During feeding mite's cheliceral stylets cross the leaf epidermis either in between epidermal pavement cells or through stomatal openings and they can empty the content of the mesophyll cells within 10 to 30 minutes. In some cases, mites also inject substances that can modify the development and growth of tissues causing very severe deformations and galls. Mites live in groups of hundreds of thousands of individuals and, in favourable conditions, populations can grow very rapidly, leading to an extraordinary number of generations in one single season.





Developing solutions for fruit growers

Belchim is committed to provide complete and sustainable solutions to help farmers protect their production with the integration of conventional, natural and biological products in combined spray programs.

With the intent of strengthening the company presence in this segment, in November 2020 Belchim acquired the distribution rights for Nihon Nohyaku's acaricide, tebufenpyrad, in a large number of countries around the world. This strengthens Belchim's presence in the acaricide market with a broader portfolio in speciality crops. Together with milbemectin-based products already present in our offer (Milbeknock® and Koromite®), products containing tebufenpyrad are now marketed under the names of Shirudo® and Pyranica®. This new Belchim combined and complementary offer of acaricides provides broad-spectrum activity against different mite species, effects on all stages, strong knock-down, translaminar activity, and long-lasting efficacy. Furthermore, this broadened portfolio combination meets the need for flexibility and delivers a strong anti-resistance solution to growers.

Both tebufenpyrad and milbemectin are active on a wide spectrum of mites: being able to control *Tetranychidae, Tarsonemidae* and *Eriophydae* with excellent efficacy, they are among the few acaricides that can control all the types of mites.

Both Milbeknock and Shirudo can control mites through all the possible modes of action. They have contact efficacy if directly sprayed on the mites while, if applied on leaves, they work by ingestion. They also have translaminar activity that enables them to control mites feeding on the underside of the leaves. This complete range of modes of action gives the Belchim offer an excellent capacity to control mites.







As mentioned previously, the high reproductive capacity of mites makes the ability to control the different stages of development of the mites critical. Both milbemectin and tebufenpyrad are also strong in this important feature as they are highly effective on all mite stages. With activity on eggs, larvae, nymphs and adults, the two products can control infection throughout the plant growing cycle, which brings huge flexibility to the timing of application for the grower.

Another important feature of Shirudo is its long-lasting effect. From trials on *Panonicus citri* it is clear that it can control mites perfectly over a long period during the season in different weather conditions. This excellent activity can also be seen from the range of temperatures across which Shirudo provides mite control without its efficacy being affected. This confirms that Shirudo is active and performs well in a wide range of conditions and can be applied in different situations and timings throughout the season.

In addition, Shirudo's good knock down effect is in line with that of Milbeknock. The milbemectin based product is recognized for its excellent fast activity: already just 12 hours after application, mites stop moving and feeding on the leaves. This very fast action leads to a substantial weakening of the mites after three days and their death within five days after treatment. For both molecules, this contributes to fast action and quick control from the very first stage of the infestation.

Milbeknock is well known for having one of the best beneficials profiles among acaricides due to the natural origin of milbemectin. This led to its approval in organic farming in some countries around the world. Shirudo is also proven to be safe for the beneficial insects widely present in orchards and its combination with Milbeknock makes the Belchim spray program against mites a sustainable and beneficial-friendly solution for crop management.

Anti-resistance strategies are critical to avoid resistance issues and safeguard existing crop protection solutions. In this regard, alternation of different active ingredients is the best way to manage a spray program to avoid resistance. Tebufenpyrad is the only active providing polygenic resistance within the METI group and for this reason it has a lower probability of causing development of resistance in mite populations. With the combination of Shirudo and Milbeknock belonging to two different IRAC Groups (21 and 6), Belchim can offer an acaricide spray program providing an excellent anti-resistance strategy.

Together, the different modes of action, the long-lasting effect and the activity on all stages of development of the mites, the fast knock down effect and the fit with a anti-resistance approach, make the combination of Shirudo and Milbeknock an unique and flexible spray program, complementary in beneficial safety and residue profile, and provide an excellent solution to fight mites successfully.



Committed to delivering sustainable solutions to fruit growers

Since the end of 2021 Belchim Crop Protection and Certis Europe have started a close cooperation under the guidance of Mitsui & Co. Ltd to enhance the capabilities of both companies to develop a sustainable crop protection business in Europe.

In the context of this collaboration, a platform for exchange of knowledge and experience has been established in order to unlock the potential of both portfolios through combined solutions and spray programs.

Thanks to these efforts, many initiatives have been developed to bring sustainable solutions to fruit growers. Belchim can now deliver a combination of outstanding products covering all fruit production with the aim of securing a mite-free crop, meeting food chain requirements and delivering sustainable production of high-quality fruits.

Belchim Crop Protection and Certis Europe can provide an offer with a high level of efficacy against mites while meeting speciality crop market requirements through the combination of six products based on milbemectin (Milbeknock and Koromite), tebufenpyrad (Shirudo), acequinocyl (Dynamite® and Kanemite®), hexythiazox (Nissorun® and Cesar®), the combination of fenpyroximate + hexythiazox (Award®) and the biorational solutions *Beauveria bassiana* (Botanigard®) and maltodextrins (Majestik® and Eradicoat Max®).

This combined portfolio provides the most complete acaricide solutions in the market, covering any possible situation in the field and addressing the increasing demand for solutions that can deliver low residue production whilst safeguarding crop health.





VEGETABLES

Pyridate: the crucial link for future-proof weed control



Pyridate: the crucial link for future-proof weed control in vegetables

Jan Vanherck – International Crop Manager Vegetables

Vegetable growers are obliged to keep their crops weed free for different reasons. Proper weed control programs enable vegetable growers to deliver high quality and safe food to European consumers in an economical way. Many factors influence the constant change seen in herbicide programs in vegetables in Europe. To support the distribution channel and growers in this constantly changing market, Belchim Crop Protection continues to pursue technical excellence and to investigate further development possibilities with pyridate.

The selective post-emergence broad-leaf weed control market segment in vegetables

Current situation:

The selective post-emergence broad-leaf weed control market segment in vegetables is very volatile on an annual basis and continuously changing over the years. The main market driver for this segment is weather conditions in the main field vegetable growing areas across Europe. Generally warm and semi-dry weather conditions increase the need for contact post-emergence herbicides. Weed growth is significantly higher in warm conditions and controlling bigger weeds requires the use of higher doses of post-emergence contact herbicides. Soil herbicides generally perform less well in semi-dry weather conditions, increasing the Super Developed Area (SDA) of post-emergence contact herbicides. On the other hand, conditions that are too dry could limit weed emergence, resulting in a lower need for post-emergence contact herbicides. In dry years, there is a small tendency to use less soil herbicides. In such years the lower use of soil herbicides doesn't compensate the extra use of contact herbicides for several reasons. All these factors have their relevant impact on the total market segment size of post-emergence broad-leaf contact herbicides

Vegetable post-emergence broad-leaf weed control market segment Europe	
Segment super developed area (million ha)	2.0-3.2
Segment value at farmer level (million €)	90-150



Future projection

The value of this market segment is expected to grow in the future. The loss of and possible future restrictions on different low price/low value solutions (contact and soil herbicides) will increase the average farmer level cost for weed control programs, boosting the total market value. To maintain general interest for herbicides at farmer level, it is estimated that the cost per hectare per treatment cannot exceed €50-70/ha, otherwise alternative weeding methods may become very interesting for farmers. Crop and weed recognition for mechanical weed control, electrical or heat treatments have been in development for several years already. Different types of robots are available on the market for automated weed control. However, all these AgTech alternatives to herbicide solutions are faced with a number of restrictions: EU legislation, high cost per hectare (machinery cost, labour time), specific machinery type required per crop, as well as several constraints in terms of weather conditions before and after "treatment" that are necessary for satisfactory performance.

Lentagran® 45 WP

Lentagran® 45WP sales are mainly focused on high value crops like vegetables, which represented 86% of total Lentagran 45WP sales in 2021. Tobacco, dry peas, clover and alfalfa contribute to the rest of the Lentagran 45WP sales in Europe. Belchim's vegetable crop expertise, supply chain improvements and market understanding contributed to an increase of 39% in turnover and 68% in total net profit over the past five years.

Changing the approach to provide "new" tailor-made herbicide solutions based on technical excellence

Using pyridate in vegetables requires a critical balance to be struck between crop selectivity and weed control efficacy, both affected by many factors. Programs need to be constantly adapted to the current situation in the field and weather conditions. High standards of technical skills are required to achieve major successes with pyridate in a very diverse group of vegetables. This in-house technical excellence allows Belchim to collaborate very closely and gain the trust of the distribution channel and farmers. In this way Belchim can grasp all opportunities for pyridate in vegetables, providing tailor-made innovative solutions to the market. Hence, being very close to the market is essential to implement this approach successfully.

In the past, vegetable growers enjoyed a high degree of flexibility in weed control programs in terms of tank mix partners, dose rates, weed stage, crop stage, timing of application, spraying techniques, number of applications. Nowadays with a severely reduced herbicide portfolio in many crops, all these factors are playing a crucial role for successful weed control. Seasonal weather conditions, EU legislation, local regulatory restrictions and food chain requirements are all factors affecting herbicide programs. The loss of many commonly used herbicides (ioxynil, linuron, glufosinate, diquat, chlorpropham, chloridazon, bromoxynil) and the lack of new active ingredient introductions in the vegetable herbicide market has severely reduced farmers' flexibility in their weed control programs. Several other European registered active ingredients (bentazon, S-metolachlor, prosulfocarb) cannot be used by farmers due to local regulatory restrictions or food chain requirements. Some other active ingredients may face severe restrictions in the future in Europe. All these elements push growers to change their approach and acceptance of new herbicide programs and encourage them to look constantly for new tailor-made programs.

A recent example is the loss of bromoxynil in Europe. Until 2021, bromoxynil was used as standard in all allium crops for post-emergence broad-leaf weed control. The withdrawal of this active ingredient in Europe has a huge impact on many allium growers. Pyridate will provide a solution for all allium growers. After several years of testing and fine-tuning ideas in many trials across Europe, Belchim Crop Protection was able to introduce

bromoxynil-free herbicide programs based on pyridate. Trials showcase that allium weed control programs without bromoxynil do need more attention in terms of application timing, weed stage, dose rate, tank mix partners, spraying technique. However, with the appropriate approach, pyridate will provide the best solution, achieving the end-result farmers and distributors are expecting.

In some other vegetable crops, the European vegetable herbicide market has reached a point where the current registered products can no longer provide control of the full weed spectrum. For example, in several root vegetable crops (carrots, celeriac, parsnip) *Solanum nigrum* has become very difficult, if not impossible, to control with the current registered product portfolio in Europe. Adding secondary standards for export (residues) and local restrictions makes it impossible for certain carrot growers to control this toxic weed in the crop. This means that many farmers are desperately looking for new approaches to control weeds in these kinds of crops. There has been a significant change in what is acceptable in terms of crop response to herbicide treatments in recent years, but the crop response must not adversely affect the crop yield or quality. Due to this change in the way of thinking, there is room in the market for developments that were considered unacceptable to the market several years ago.



Pyridate in onions



Pyridate in carrots

Pyridate innovation and future in vegetables in the European Union and the rest of the world

Europe

Belchim has successfully finalized the pyridate active ingredient registration (AIR) renewal process thanks to in-house state of the art regulatory know-how. Pyridate registration was renewed in Europe for 15 years in 2015. After the pyridate AIR process, Belchim Regulatory colleagues successfully prepared the Lentagran 45WP article 43 process strategy, at this date almost finalized in Europe with success. These critical regulatory steps ensure the future availability of pyridate in Europe for vegetable farmers and enable Belchim to develop future innovations with this proprietary molecule. The loss of important competitors in the contact herbicide market is expected to generate a sales increase of Lentagran 45WP of over 10%. Pyridate is currently registered in 27 different vegetable crops across Europe. In the coming years Belchim is actively screening pyridate in 15 extra vegetable crops to target new markets. User exposure and ease of use for growers are critical elements for future pyridate innovations. Constant innovation is key for agrochemical companies and Belchim is therefore actively investing in these elements. All future pyridate innovations will significantly grow Belchim's position in the targeted markets and continuously boost the market value extraction. This should enable Belchim to further increase pyridate turnover and net profit in vegetables significantly over the coming 10 years.



Geographic expansion outside Europe

Next to Europe, an increased interest for pyridate development in vegetables can be seen in different parts of the world (Middle East and Africa, Latin America, USA, Canada, New Zealand and Australia). The two main drivers for this are the loss of old, low-value active ingredients and the export of different vegetables to Europe. Exporting vegetables to Europe provides the opportunity to access higher value markets but all imported consumer goods must meet European food chain requirements. This limits the available product portfolio for growing vegetables outside Europe, increasing the interest for pyridate-based solutions. All the technical excellence acquired in the last decade in Europe will be essential to support the pyridate development on other continents.







BIORATIONALS
How to unlock their potential



How to unlock the potential of Biorationals

Jan Mostert - Head of the Biorationals Innovation Team, Certis Europe

Certis Europe defines Biorationals as *"registered plant protection products generally derived from the natural environment, offering improved benefits for plants, people and the planet, which are increasingly important factors for Integrated Crop Production to satisfy requirements of the value chain and consumers."*

The biologicals market, with an annual growth rate in recent years of around 15%, is recognised as the fastest growing crop protection segment in Europe. Given political drivers such as the EU Green Deal and its Farm to Fork and Biodiversity strategies, as well as national policies aiming to reduce pesticide usage, it is expected to maintain a similar level of growth going forward and could more than double its share of the overall market value by 2030.

Certis Europe has for many years focused on expanding and greening its product portfolio using science-based research to deliver technically sound, sustainable and economically viable solutions in support of growers and for the benefit of consumers. Already very much in tune with the new EU strategies, the company continues to invest in research and development in biorationals.

Biorational products have long been used extensively in horticulture and, though at present the majority of Biorational usage continues to be under protected conditions (e.g. salads, tomatoes, cucurbits, peppers, etc.) and in the speciality crops sector (e.g. stone fruits, citrus, vines), the development of Biorational sustainable solutions for open field arable crops is also a high priority for the company.

The Biorationals Innovation Team

The Biorationals Innovation Team of dedicated experts was established in 2020 with the specific aim of creating a bigger pipeline for the company, bringing new, innovative Biorational products to the sales teams as efficiently as possible. It seeks new candidate bioproducts and compounds to match the technical and commercial needs of the crop teams across the company and runs a streamlined program of early-stage technical checks and screening of the candidate products under controlled conditions at the Biorationals Research Centre in Nimes, France, to check performance on key targets. Products in screening from R&D partners around the world currently include enzymes from Denmark, biotech products from Italy and New Zealand as well as Chinese biorational compounds that have, in some cases, been used in traditional Chinese medicine for centuries. Successful candidates progress to the field trials program, which will in 2022 test around 30 products against various key target pests and diseases. Approximately one third of these are being tested for a second season following successful results last year. In total about 120 trials across all crops, countries and targets are planned in 2022. The decision on whether to continue investing in the product with further development is normally taken after the second year. Where appropriate, preparation for registration will follow with a view to bringing valuable Biorational products to market.



Growing for The Future (G4TF)

Considerable progress has been made over the last 20 years in developing Integrated Crop Management programs that include Biorational and conventional products, for the control of pests and diseases in a wide variety of crops. With its innovative Growing for The Future programs Certis Europe has assisted growers to adapt their production to the requirements of the supermarkets regarding of the number of active substances used and the accepted Maximum Residue Levels (MRLs). G4TF responds to the most demanding consumer desires in terms of freshness, good appearance, size and flavour in their fresh fruits and vegetables as well as residue-free healthy crops, produced safely for the environment and the workers.

This project was initiated in Certis in Spain working in cooperation with major growers and large producer groups. It has now spread more widely across southern Europe, developing protocols and pest and disease control programs in both conventional farming (IPM programs using a very low percentage of conventional products and a high percentage of biorational products) and organic agriculture, producing totally residue-free crops (using biorationals with auxiliary insects and pheromones for mating disruption or 'attract and kill' systems). Programs have been developed for protected fruit and vegetable crops, stone fruits, soft fruits, citrus and vines.

In addition to developing new products, work also continues on the development of existing products from the company's Biorational portfolio to offer effective, safe and sustainable solutions across more crops and against different pests.

From glasshouse to field

With an increasing number of agrochemical products being lost, farmers are being forced to seek new ways of working to protect their crops in open field situations. This may involve new crops, crop rotations and cropping systems, mechanised weed control, more resistant varieties, new precision technologies using satellites and digital cameras, robots, etc. for crop protection product application. It is also likely that, following the consumer demands and the new EU policies and strategies, growers will look to increase the number of Biorational products integrated into their crop programs, providing a complete solution based on Integrated Pest Management (IPM) including conventional and Biorational solutions.

Efforts both to discover new active ingredients and to extend the use of existing products to more open field crops are ongoing, but it is vital to understand that the successful transfer of Biorational products to achieve effective pest control in such situations is not a simple matter. Since almost no Biorational has systemic activity, one of the major challenges here is to optimise application techniques to ensure accurate product contact with the target pests, even, for example, on the underside of leaves. In addition, Biorational products degrade more quickly than conventional synthetic crop protection products and are therefore more susceptible to adverse weather conditions, potentially leading to a reduction in performance. There have been some promising results in improving application techniques and characteristics such as rainfastness, but work is in progress.



In the arable sector some segments are identified with more Biorational input than others: insecticides, simply on account of the reduced number of new conventional solutions, are high on the list and are used in IPM programs in stone fruit, citrus and vines; fungicides too, where there are many Biorational candidates, are registered in wheat, rice, cabbage, tobacco as well as in vines for both table and wine grapes. The herbicide segment seems more likely to remain served by conventional products for longer, due to the availability of new conventional actives from the major companies that meet registration requirements and the lack of Biorationals with systemic activity and selectivity. However, Biorational molluscicide products and potato sprout suppressants are already widely used.

Promising trends have been seen in the development of Biorational cereal fungicide projects, there are other Biorational products (e.g. Neudosan® Neu, Amylo-X®, Botanigard®, Eradicoat® Max) in the registration process in various countries and a range of further products for open field use in the development pipeline with field trials underway. There is progress, but it will take time and such products must go through the regulatory process before they can reach the market.



Certis Europe and Belchim Crop Protection

"Over the last 20 years Certis has become a leading player in Biorational products while Belchim Crop Protection has also been working for some years with this type of product. Development work continues to progress across the crop sectors, and we expect the collaboration and cooperation between the two companies to yield even more exciting and extensive results in the future."

Francisco Torres - Head of Marketing, Certis Europe



New products

Problad®: New broad-spectrum biorational fungicide

One product that has successfully come through the development process for Certis is Problad®, a novel, broad-spectrum biorational fungicide for use in both protected and open field cropping from CEV in Portugal.

Registration is expected in the Netherlands in 2022 with other Member States to follow. A new active substance of natural origin (formed during the germination process in sweet lupins, *Lupinus albus*, and extracted from the germinated seeds) and a new fungicide class FRAC BM01, it has a unique, multiple mode of action and is exempt from Maximum Residue Level (MRL). A short Pre-harvest interval is expected, which makes Problad a flexible partner and valuable tool to reduce plant protection residues in the harvested produce. With no known cross resistance to other fungicide classes, it is also an important new tool for sustainable fungicide resistance management.

The active substance is non-toxic, readily biodegradable and submitted as a low-risk substance at EU level. It has no negative effect on humans, mammals, bees, beneficials nor other non-target organisms and is fully IPM compatible. It is highly effective against many plant pathogens like *Botrytis*, Powdery Mildew, *Monilia* and rust and authorization is initially expected for use in tomato, strawberry, vines, stone fruit and rice. A range of other crops will be added at a second stage.

Pedro Michelin,
Portfolio Product Manager
Speciality Crops

PROBLAD®



Vintec®: When product market fit drives label extension and territories diversification

Vintec® is the name of Bi-PA's bio fungicide which was launched six years ago against Esca in vineyards and vine nurseries by Belchim Crop Protection. Vintec is based on the specific *Trichoderma* strain named SC1, isolated from hazelnut plant tissue and registered for crop protection use. While diseases in perennial crops generally infect the annually produced organs and structures like flowers, fruits and leaves, Esca infects the trunk through the pruning wounds and, after a few years, it can kill the entire plant, generating significant economic losses.

Vintec expectations were high, customers and vine growers showed their enthusiasm by filling meeting rooms, seminars and field tours but sales did not take off as foreseen. To trigger the demand for Vintec, it was necessary to build awareness of the magnitude of the issue caused by lack of protection on the pruning wounds. In fact, Esca takes a few years to spread inside the trunk, leading to a lack of rapid visual results which is contrary to the vine growers' expectations.

Instead of stopping the developments with biologicals, Vintec became Belchim's case study to understand how to position, promote and sell a biological product in a specific market. Several collaborations were initiated with leading academic scientists working on Esca to better understand Vintec's mode of action and its intrinsic value while contacting customers, farmers and nurseries across Europe to understand their specific needs and the drivers for their decisions.

The Vintec project finally pivoted in 2020 with the registration of its use against Botrytis in indoor tomato in Spain. A thorough approach was developed to ensure the right market fit, thanks to collective work on Vintec's value proposition. It resulted in a successful product launch, even in the context of a new and unexpected challenge: Covid-19.

Belchim is now capitalizing on the learnings from the successful launch in indoor tomato in Spain and is pragmatically diversifying Vintec uses thanks to label extensions and geographic expansion to new and carefully selected territories and segments, such as table grapes in South Africa.

Bearing in mind their complementarity with conventional plant protection products, Belchim Crop Protection focuses its efforts on the development of innovative Biorational crop protection solutions to enable farmers to step into sustainable Integrated Pest Management (IPM) and achieve highest market standards, while addressing societal expectations and meeting increasingly demanding regulations.

The valuable marketing experience gained so far through the commercial development of Vintec has prepared Belchim Crop Protection well for the successful launch of the three major compounds currently in its pipeline, which will help the company to achieve a meaningful position in the biologicals segment.

Gabriel D'Enjoy - Product Manager Biologicals, Belchim Crop Protection

Vintec®





Our development. Your growth.

Thank you for taking the time to learn more about Belchim and our performance in 2021.

We wish all our employees, customers, suppliers and stakeholders a healthy and successful 2022.



Notes

Colophon:

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