
Connecting
WITH PEOPLE
AND
THE PLANET,
for our future
AXEREAL
Land and people for the future

For several years now, Axereal has been working to bring about an agricultural and food transition to respond to, or even pre-empt, the challenges of the twenty-first century. These challenges are numerous: we must act on the climate imperatives and meet society's expectations, while providing farmers with stable long-term incomes. Agriculture also has a role to play in fighting climate change and adapting to its impacts, to achieve the goals set by the Paris Agreement and keep global warming below 1.5°C by 2030 and 2°C by 2050. We must also produce healthy, ethical products in greater quantities and to higher standards, while striving to deliver farm profitability and long-term visibility.

Our responses to these challenges combine the obligation to reduce greenhouse gas emissions with expectations around traceability and food safety. They result from a keen understanding of our environmental responsibility, focused on soil health and biodiversity, air quality and water resources. All this is supported by our capacity to innovate and experiment, both in the digital arena and to find solutions to replace chemicals, thanks to our agronomy knowledge and our R&D facilities.

As a result of this systemic approach, underpinned in particular by the carbon trajectory we have defined based on our Scope 3 carbon footprint assessment, we are now promoting a new model: regenerative agriculture. This "virtuous" vision of agriculture provides our staff with a common focus and flows through all our processing businesses via a positive approach based on a culture of respect and proof.

It is for all these reasons that more and more farmers are keen to work under this model, and more and more customers are being won over by its relevance and benefits. Their adherence enables us to generate value from the new productions and encourages us to offer new practices and channels that as well as being climate-appropriate in the future, will meet customer and consumer demand.

In particular, we are developing plant protein production using pea crops and an innovative dry extraction method. We are also about to start brewing our own beer via a process capable of capturing and reusing the $CO_2$ produced during fermentation. In addition, we have completed a study into the future impacts of climate change in the locations in which we operate with a view to building a strategy to make our productions more resilient. The measures involved will include choosing appropriate crops and selecting less water- and energy-intensive processes. The strategy will be backed by our past and future investments in eco-design, renewable energy production and decarbonisation, in particular for transport.

All these impactful, complementary initiatives will come together to enable the agriculture of the future, an agriculture that will provide solutions for the environment and for society. ■

**Jean-François Loiseau,**
Chairman

**Paul-Yves L'Anthoën,**
CEO



# ***Regenerative agriculture,***
## *the cornerstone of Axereal's vision of the future*

At Axereal, we launched our sustainable agriculture strategy in 2017 with the CultivUp standards. Since then, we have been broadening and deepening our future vision for farming, for example by carrying out a group-wide carbon footprint assessment and creating low-GHG channels. As a result, we are now well-placed to promote a judicious model capable of producing results. It is a sustainable, low-carbon, productive and resilient approach focused on nurturing the soil and protecting nature: **regenerative agriculture.**

With regenerative agriculture, farmers will be able to produce, in quantity and for the long-term, high-quality agricultural raw materials while cutting their carbon footprints, in particular by reducing the use of nitrogen fertilisers, preserving and restoring biodiversity, improving soil fertility and safeguarding water resources.

It is a response to the interconnected challenges of the changing climate, society's evolving expectations, our processing customers' needs and the agricultural transition. As such, it runs through all of Axereal's operations, supplying our various channels and subsidiaries. It provides us with a common focus and is beneficial to the entire group and its ecosystem. ■

# ***5 facets of farming***

### 1 *Reinforce soil health*

Improve soil fertility by moving to selective tillage and adding organic matter, either in the form of crops that naturally return nitrogen to the soil, or by using organic fertilisers or straw after harvesting.

### 2 *Reduce chemical inputs*

Expand the use of decision-support tools, which indicate the doses of fertiliser and plant protection products required by individual plots and thereby limit the total quantities used on the farm.
Make maximum use of alternatives to chemicals – biosolutions and combined approaches.

### 3 *Adapt crop rotation management*

Extend rotations by adding in intermediate crops (ideally pulses) which both require low levels of inputs and fertilise the soil, to limit chemical fertiliser consumption.
Develop the use of cover crops and service plants which, when combined with cash crops, improve soil fertility.

### 4 *Biodiversity and water*

Protect and develop biodiversity, which is essential to maintaining the ecosystem and regenerating the soil.
Protect water resources by reducing the use of chemical inputs, which can pollute soils and groundwater, and by controlling water demand more effectively, either by improving irrigation management or by concentrating on crops that require less water.

### 5 *CSR and diversification*

Ensure farms are profitable both now and in the long-term by generating returns on the changes farmers make to their practices and by encouraging them to diversify into renewable energy generation (for example through anaerobic digestion, solar PV or wind turbines), bee-keeping, agroforestry, etc.

### *CLIMATE strategy*

France's national low-carbon strategy requires the agricultural sector to cut its greenhouse gas (GHG) emissions by 19% by 2030 and by 46% by 2050. For field crops, this mainly means reducing nitrogen volatilisation in the field. Methods for achieving these objectives include extending crop rotations by adding in low-input crops such as peas, thereby limiting the use of the chemical fertilisers that account for more than 80% of agriculture's $CO_2$ emissions, using various agroecological practices (such as cover crops) to encourage carbon sequestration in the soil and cutting emissions generated by transport. Axereal's strategy centres on the creation of low-GHG specifications channels, which give farmers access to new markets attuned to both customer demand and consumer expectations.

## *Support and recognition with the*
# CultivUp Régénératif label

Some 4,000 farmers are already involved in Axereal's proprietary CultivUp strategy, and so are being supported through the change in practices that the agroecological transition will demand. CultivUp is based on regular audits and serves as a foundation from which to build up sustainable channels. The standard

consists of 70 environmental, economic and social criteria which farmers must follow. It is certified "environmental value level 2" by the French ministry of agriculture and food, and meets the silver-level requirements of the SAI Platform global sustainable agriculture standard.

CultivUp is on the point of evolving to become CultivUp Régénératif, to support the introduction of regenerative agriculture across Axereal. The new standard will include indicators of outcomes linked to regenerative agriculture to demonstrate the environmental benefits of actions and strategies put in place to reduce greenhouse gases, reinforce soil health and protect nature. ■

- ***Soil health***
- ***Rotation management***
- ***CSR and diversification***
- ***Reducing chemical inputs***
- ***Biodiversity and water***

## *Coherence with*
# future changes in the climate

Forward planning and adaptation are the watchwords of our group's Climate Strategy. It is underpinned by a study into the effects of climate change out to 2030 in the area in which Axereal operates. The study is based on scientific data from the IPCC and aims to quantify impacts on production yields and farm profitability.

A second portion identifies and evaluates various adaptation strategies, such as introducing new species, modifying crop rotation plans, changing sowing dates, etc.

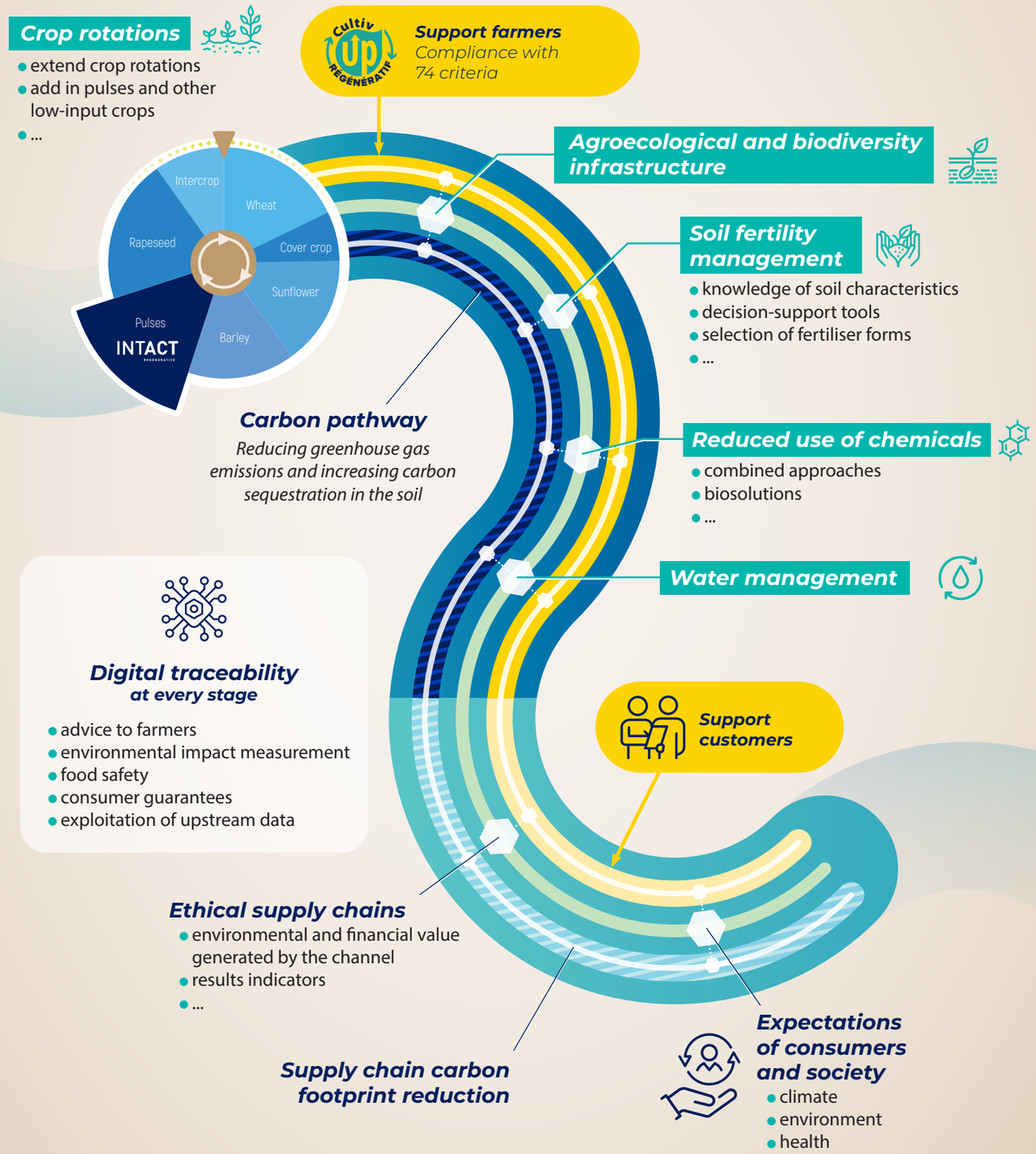
Thanks to this work, we will be in a position to advise farmers on competitive, sustainable farming practices tailored to the predicted climate of 2030. The slow rhythm of agriculture makes it vital that farmers start preparing for the predicted effects of climate change now, with the support of the cooperative, to ensure their farms remain profitable long-term. ■

*The Agronomy Seminars are an opportunity to talk with cooperative members and customers about the challenges of precision farming and carbon, and to present the latest innovative combined plant-protection solutions.* ▼



## *A sustainable response*
# *for manufacturers and consumers*

**Introducing a regenerative agriculture strategy requires farmers to change their approaches. In doing so, they are investing in the agricultural and food transition and adding value to their productions.**



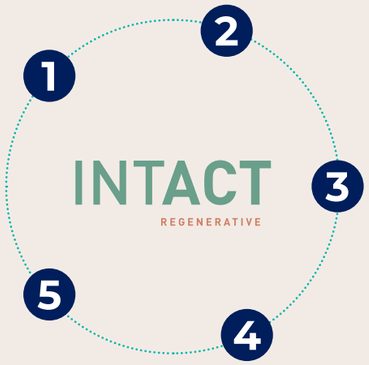
# Our innovations and **future-facing projects**

## Intact paves the way for plant protein

By taking a stake in Intact, Axereal has set in motion the creation of a plant protein production channel, primarily to supply the food industry. Intact is a French start-up which has devised an all-new, low-carbon, dry extraction process for pulses. This venture takes the cooperative into a new market which will extend all the way from the crop in the field through to the value-added product, using a planet-friendly approach perfectly in line with our regenerative agriculture model. The pea protein crop that will kick off the venture has an agronomic interest as it is able to capture nitrogen from the air and transfer it to the soil to fertilise it naturally. This limits the need for chemical fertilisers and reduces

$CO_2$ emissions. Throughout the 2022-2023 season, "Intact ambassador" farmers contributed to improving knowledge and practices relating to this under-utilised crop and identifying the practices that will optimise yields. The first Intact factory is being built in Centre-Val de Loire, in France. It will be completed in late 2024 and, once fully up and running, will process 30,000 tonnes of peas per year. ■

### The Intact dry extraction process




1. Technical procedures to extract the protein (cracking, grinding, separation, etc.)
2. Minimal water consumption
3. Chemical-free method
4. Environmental footprint eight times lower than a wet extraction approach
5. Innovative on this scale: 30,000 tonnes of peas processed per year

## R&D at the heart of the regenerative agriculture model

The only way to transform the agricultural model is by innovating to develop new practices and channels and by integrating new technologies to improve accuracy, traceability and competitiveness, while showcasing the impacts of these changes.

At Axereal, we focus our R&D on three priority objectives:

- Reducing the greenhouse gas emissions of farms and limiting chemical use to the strict minimum.
- Optimising logistics – from the grain elevator to the customer – by improving storage quality, reorganising flows and decarbonising transport.
- Investing in primary processing to create value in competitive markets, across agriculture, milling and malting. ■

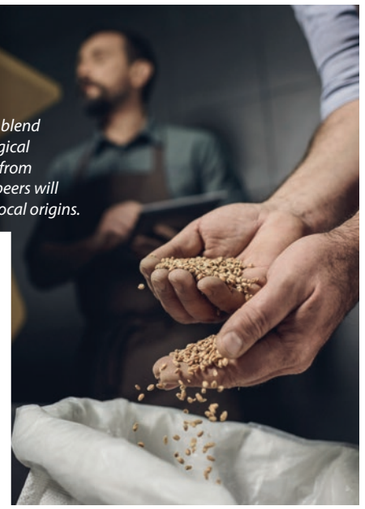


## A premium beer, made in France by Axereal

Axereal is set to launch its very own beer. Our first brewery is being built in Bracieux, eight kilometres from Château de Chambord, with completion set for October 2024. The brewery will be a flagship for the group's sustainable channels and the building itself will be eco-designed (timber structure, PV solar panels, etc.). Visitors will be able to watch the brewing process through plate-glass windows. $CO_2$ from the fermentation process will be captured and reinjected during bottling. Production capacity will ramp up to reach 10,000 hectolitres by 2029. The beer range, which is the result of a partnership with the Chambord National Estate, will include a lager, a white beer, an amber ale and an IPA, as well as special editions. It will be sold to both trade and retail customers. ■

domaine national de Chambord

*Brewed using a skilful blend of expertise, technological innovation and grain from ethical channels, the beers will proudly display their local origins.*



### A local, ethical brewery

**This premium beer will be brewed at Bracieux. It will use an ultra-local supply chain with local low-carbon barleys from the cooperative, malted at Boortmalt's Issoudun malting plant less than 90km away. Combined heat and power, anaerobic digestion and solar thermal energy systems will minimise its energy footprint.**

## Energy management

**At Axereal, we have a long-standing history in energy and $CO_2$ emissions reduction. Our concentrated focus on energy management is one of the major avenues that will enable us to achieve the objectives of the Paris Agreement. Here are some of the projects that feature on our energy road maps:**

### *Heat loop: Antwerp North heat network* (reuse)

Ground was broken on a large-scale heat network in Antwerp North in 2022. Capturing residual heat from neighbouring industrial facilities in the ports is an opportunity with great potential. Residual heat from one industry can be a source of heat for another. Following a number of partnerships with industrial companies and a five-year development phase, the Antwerp project has now been launched.
A 12km heat loop will transport residual heat from the Indaver incineration plant to Antwerp City and the Boortmalt plant. Thanks to this project, which will supply around half of the site's heat needs, we will be able to improve the quality of our products and services and cut $CO_2$ emissions by around 80,000 tonnes per year.
This project dovetails perfectly with our objectives and we are already looking at ways to bring our emissions to zero well before 2050.
We are investigating opportunities to get involved in other projects similar to the Antwerp heat loop in France and the United Kingdom.

### *Solar thermal power plant* (sun)

The solar thermal power plant built at Boortmalt's Issoudun malting site is the largest such plant serving an industrial site in France.
The 15,000m² of panels generate more than 9,000MWh of heat, covering almost 10% of the site's energy needs. The heat produced using solar energy has reduced the volume of gas needed to run the malting process and cut the site's carbon footprint by 2,000 tonnes of $CO_2$ per year.
Today, the plant draws almost half of its energy from renewable sources: 10% solar, 23% biomass and 11% combined heat and power. The remainder is still supplied by gas.

### *Optisteep* (water)

Optisteep is one of the key technologies for reducing malting's water consumption. Only a single wet-steep process is required and malt quality and yield are maintained or even improved, while water consumption for the steeping phase is cut by up to 40%. Five malting plants are already using this system and achieving excellent water efficiency. This technology offers a highly beneficial synergy between saving water and reducing energy consumption, which has motivated us to roll it out to new sites.

### *Solar carport* (sun)

As part of its efforts to cut its energy consumption by 50%, Boortmalt has innovated with a solar carport. This facility, installed in Antwerp, consists of 2,000 solar panels with maximum power of 1MW each, supplying energy to 60 charging stations. It has made it feasible to replace the fleet of diesel and petrol vehicles with electric and hybrid equivalents. The excess energy goes to the plant or is injected into the national grid.
Key advantages:

- A saving of more than 1,000 tonnes of Scope 3 $CO_2$ emissions per year.
- The opportunity to charge electric vehicles using "green" solar energy produced locally.
- Shade and protection from the elements: the cars are sheltered from the sun in the summer and the snow in the winter. ■

## Crop experimentation in constant expansion

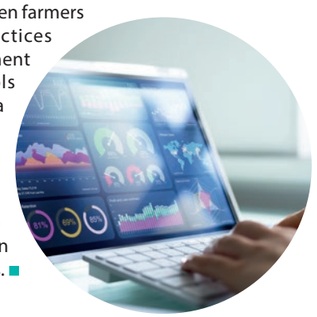
At Chaumoy farm, our crop test centre in Cher, France, we test new practices under real conditions and evaluate their performance before we recommend them to farmers. On the experimental farm, we try out the innovative solutions developed for regenerative agriculture such as substitutes for chemical products, nitrogen-free fertilisers and other alternative fertilisers.
The need for proof of the environmental impact of regenerative agriculture has led us to focus on four soil-based indicators: $CO_2$ content, alteration, water-holding capacity and underground biodiversity. For the last three years, we have been carrying out soil monitoring on 15,000 hectares to fine-tune management tools and improve practices in order to optimise these indicators. ■

### The Arpège project - putting in the legwork on new crops

**The Arpège experimental project, organised by a consortium of businesses led by Axereal, aims to optimise the production potential and environmental benefits of introducing low-carbon, low-input crops (peas, soybeans, sorghum, lentils, buckwheat, alfalfa, etc.) into crop rotations.**
**Arpège also integrates the production and introduction of service plants into crop rotation, which is an important factor in decarbonising and regenerating soils.**

## The importance of data

Data lies behind all the elements of proof that stakeholders expect to see of the relevance and benefits of regenerative agriculture. It is collected when farmers enter the agricultural practices they use into the management and decision-support tools provided to them. The data is consolidated, organised and modelled at different levels (product, plot and farm) so that different use cases can be presented to farmers and performance can be showcased for customers. ■



### How blockchains offer transparency and traceability

**The data entered by the farmer (sowing dates, plot, type of fertiliser and dosage used, volume of water, yield, grain elevator, mill, etc.) is used to track the conditions under which crops are produced and products processed. It makes up a blockchain, which is like a passport for the end product. It can be viewed by scanning a QR code.**

## The importance of training

Regenerative agriculture requires expert knowledge in a range of fields, some of which are new: the impacts of climate change, $CO_2$ and other greenhouse gases, biodiversity and its agronomic effects, resilient crops, technological tools and new agricultural equipment.
To enhance knowledge and improve skills in all these areas, it is vital to train not only farmers, who are in the front line as regards implementation, but also staff, who promote and support the approach in their interactions with cooperative members, suppliers, customers, potential customers and others. ■


### Objectives for the present and the future

**Training is a major enabler in rolling out and promoting regenerative agriculture and achieving our greenhouse gas emission and biodiversity and water preservation objectives. It reaches beyond our group to include customers and suppliers.**

#### Farmers

Implement regenerative agriculture and track practices to enable us to calculate environmental impact indicators.

#### Technical sales executives

Bring farmers on board with regenerative agriculture, and advise and support them in their choices and in changing their practices.

#### Customers

Generate additional value for regeneratively farmed products, in particular those produced under channels, so that farmers are paid a fair price that covers the risks they have taken and value is distributed equitably between all the operators in the supply chain.

#### Suppliers

Develop low-carbon solutions and products, in particular fertilisers, crops suited to the changing climate or resilient to it, tailored decision-support tools, etc.



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# Axereal, *innovating to develop* the agriculture and food of the future.

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# **Axereal,** *our group and our locations*

**Axereal is a leading agricultural and food processing cooperative group operating in France and around the world. We originate grain and create value-added channels, and also specialise in processing grain for the malting, milling and feed compound markets.**

Our role has always been to maximise the value of our cooperative members' production and help secure the long-term future of the farms in our area. In keeping with our cooperative mission, we also develop sustainable, competitive, high-growth channels attuned to the expectations of the market.

We aim to play a role in the agricultural and food transition by propagating our regenerative agriculture model, from the fields all the way to the processing sites. This strategy, which draws on the synergies between the group's businesses, helps us to develop an offering that meets demand from customers and consumers for products that are high-quality, safe, locally produced and sustainable.

At Axereal, we bring together our expertise in agronomy, our capacity to innovate and invest, our local networks and the strength of our sales teams to support all our stakeholders as we progress through this transition. ■

**11,000**
FARMER MEMBERS

**8,000**
TRADING CUSTOMERS

**Almost 3,700**
FARMERS WORKING WITHIN THE CULTIVUP SUSTAINABLE AGRICULTURE INITIATIVE

**€5bn**
IN TURNOVER OF WHICH **50%** GENERATED OUTSIDE FRANCE

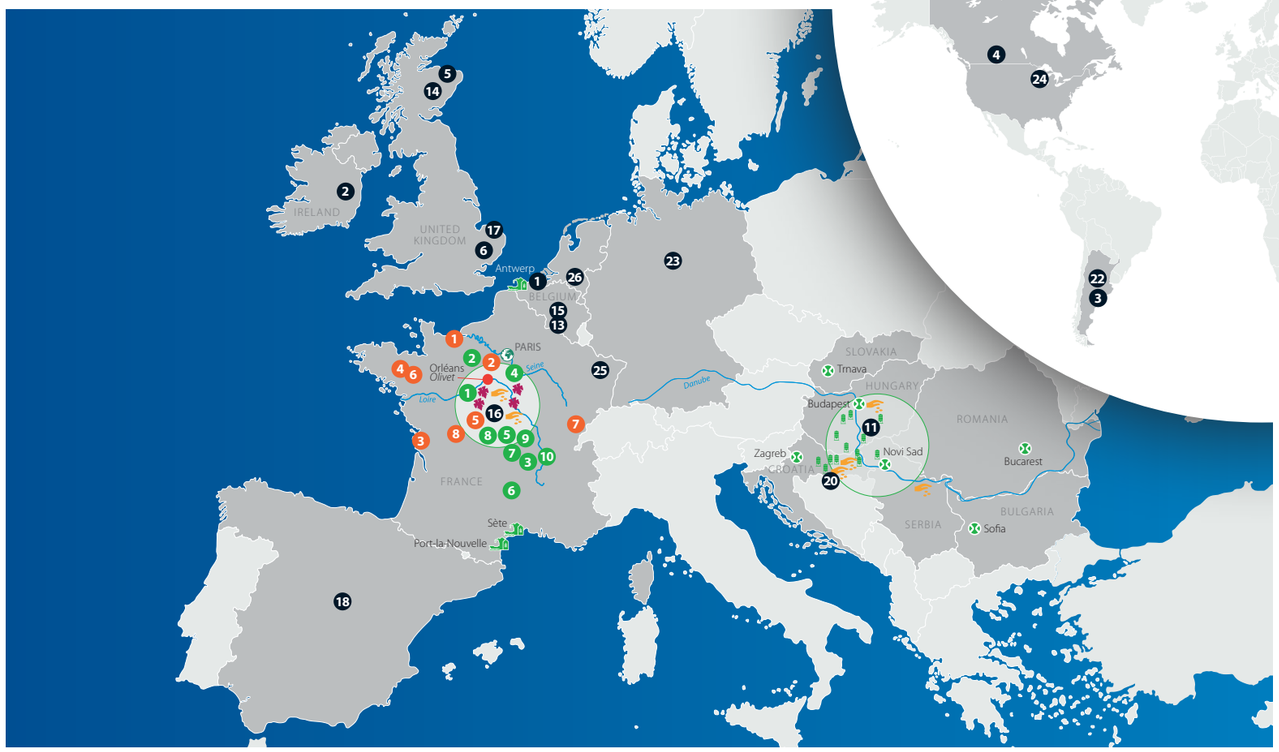
**4.2Mt**
GRAIN ORIGINATION

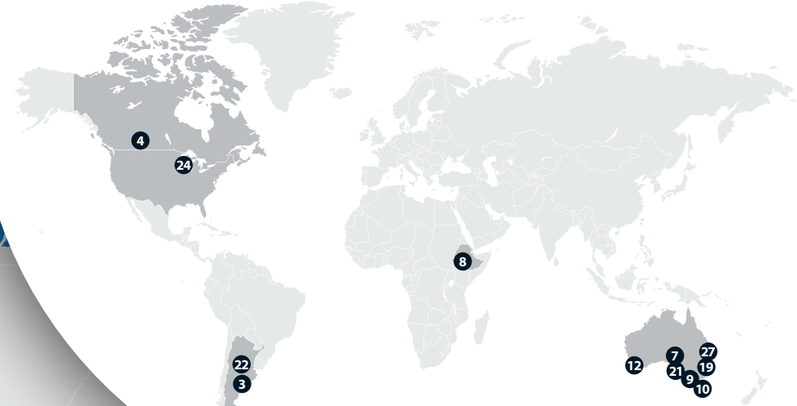
**1Mt**
OF GRAIN ORIGINATED UNDER CHANNELS

**World leader**
IN MALT

**3,540**
STAFF

**€280M**
OPERATIONAL EBITDA

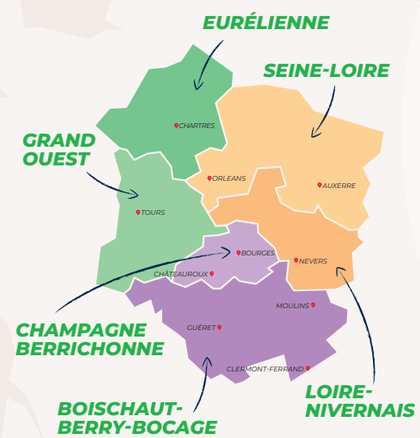


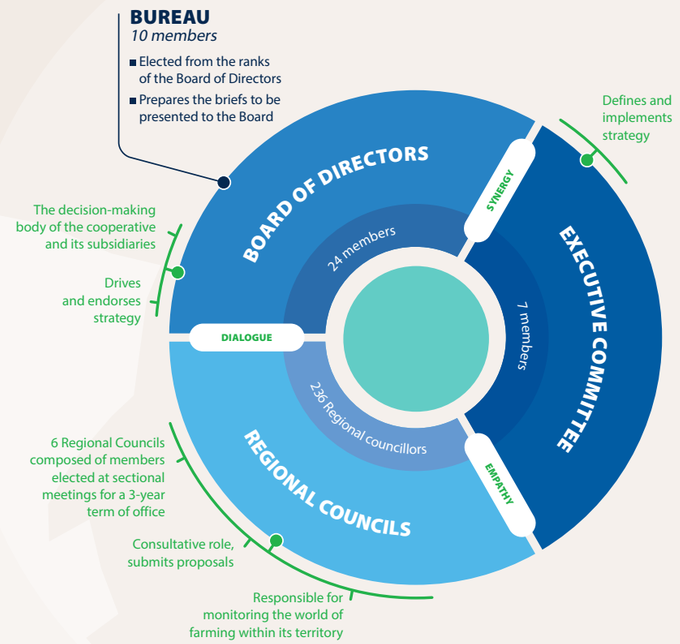





# *Empathy and* ***governance***

Axereal's governing bodies have always worked very closely with our local operations and all our stakeholders. This is one of the things that makes Axereal different, and it stems from our cooperative model. In addition, governing body members believe in the importance of constantly learning so they are in a position to guide the business. ■




**350,000 tonnes**
OF FLOUR PRODUCED PER YEAR ENOUGH TO MAKE **1.4 BILLION** BAGUETTES

**150** to **300g of malt**
**= 1L of beer**
OUR PRODUCTION CAPACITY IS **3 MILLION TONNES** OF MALT

AXEREAL AGRICULTURE

- **Origination zones**
- **Seed stations**
- **International trade** GRANIT NÉGOCE
- **International agricultural businesses** AXEREAL CENTRAL EUROPE
- **Wine-growing** AX'VIGNE
- **Logistics and port services**
- **Grain elevators** AXEREAL CENTRAL EUROPE

AXEREAL ÉLEVAGE

**1** Blois
**2** Bonneval
**3** Feurs
**4** Ladon
**5** Lapeyrouse
**6** Le Malzieu
**7** Neuvial
**8** Pouligny-Notre-Dame
**9** Saint-Germain-de-Salles
**10** Épercieux-Saint-Paul

BOORTMALT

**1** Antwerp
**2** Athy
**3** Bahia Blanca
**4** Biggar
**5** Buckie
**6** Bury St Edmunds
**7** Cavan
**8** Debre Birhan
**9** Delacombe
**10** Devonport
**11** Dunaújváros
**12** Forrestfield
**13** Gembloux
**14** Glenesk
**15** Herent
**16** Issoudun
**17** Knapton
**18** Madrid
**19** Minto
**20** Nova Gradiška
**21** Port Adelaide
**22** Punta Alvear
**23** Salzgitter
**24** Sheboygan
**25** Strasbourg
**26** Swalmen
**27** Tamworth

AXIANE MEUNERIE

**1** Caen
**2** Gallardon
**3** La Jarrie
**4** Maure-de-Bretagne
**5** Reuilly
**6** Val d'Anast
**7** Vincelles
**8** Vivonne

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