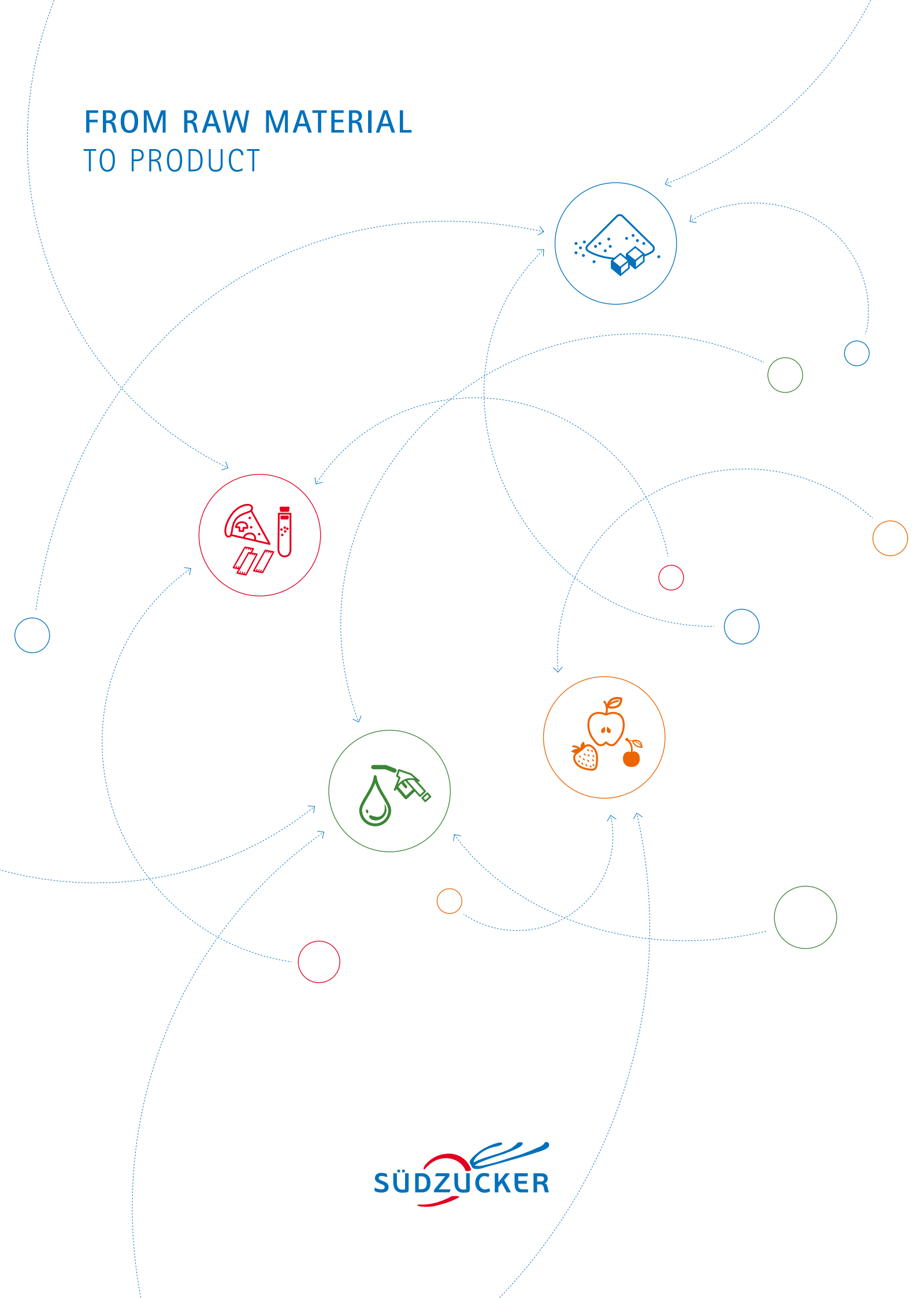


# FROM RAW MATERIAL TO PRODUCT



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# SÜDZUCKER AG

## COMPANY PROFILE

Südzucker has evolved from the position of a regional sugar producer to that of a multinational corporation, and with its sugar, special products, CropEnergies and fruit segments, is one of the world's leading food industry companies.

In the traditional sugar business, the group is Europe's number one supplier of sugar products, with twenty-nine sugar factories and three refineries, extending from France in the west via Belgium, Germany and Austria, through to Poland, the Czech Republic, Slovakia, Romania, Hungary, Bosnia and Moldova in the east. The special products segment, consisting of the functional food ingredients for food and animal feed (BENEO) division, as well as chilled / frozen products (Freiberger), portion packs (PortionPack Europe) and starch divisions, conducts business in high-growth dynamic markets. The CropEnergies segment is responsible for the bioethanol and animal feed businesses in Germany, Belgium, France and Great Britain. The group's fruit segment operates internationally, is the world market leader for fruit preparations and is a leading supplier of fruit juice concentrates in Europe.

In 2014/ 15, the group had about 18,500 employees and generated revenues of € 6.8 billion.

Our success is based on our core competencies, above all our broad-based expertise in the large-scale conversion of a wide variety of agricultural raw materials into high-quality products, especially into food for industrial customers and end users. Our marketing focuses on business-to-business clients. A strong ownership structure provides a reliable framework for the company's development.

Our goal is to work in concert with our shareholders, suppliers, customers and employees on responsibly shaping the future, based on a comprehensive vision of continued sustainable, profitable growth, earning a return on our invested capital and steadily improving shareholder value over the long term. At the same time, we want to appropriately consider the interests of future generations.

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# FROM RAW MATERIAL TO PRODUCT

Only those companies that deliver a convincing performance at every step in the supply chain can be sure of their performance on the market. Südzucker demonstrates this expertise in each of its four segments: sugar, special products, CropEnergies, and fruit. This annual report provides a deeper insight into our management of the value chain, along which we process agricultural commodities into high-quality products for our customers. Because the knowledge we have today determines our strength in the future.

PAGE 04



**SUGAR SEGMENT**  
FROM BEETS TO SUGAR

PAGE 18



**SPECIAL PRODUCTS SEGMENT**  
FROM AGRICULTURAL PRODUCT TO  
HEALTHY FOOD EXTRACT

PAGE 24



**CROPENERGIES SEGMENT**  
FROM BIOMASS TO BIOETHANOL

PAGE 30



**FRUIT SEGMENT**  
FROM FRUIT TO FRUIT PREPARATION


# AND THE BEET GOES ON: FROM FIELD TO CRYSTALLIZED SUGAR IN UNDER EIGHT HOURS

From field to customer: We have established an all-encompassing refining and supply chain in our sugar segment, so nothing is wasted.



SUGAR SEGMENT





EVERY DAY, CONSIGNMENTS  
OF A WIDE VARIETY OF SUGAR  
PRODUCTS ARE SENT ON  
THEIR WAY TO SUPERMARKETS  
ACROSS EUROPE.



## SUGAR PROCESSING: OUR ZERO-WASTE POLICY, PURE AND SIMPLE

When we eat something sweet today, we hardly ever think about the fact that sugar was once a luxury item that was stored in sealable silver cans. Today, it's a common commodity. That is in no small part due to the success story of the sugar beet in Europe, which in turn is closely associated with the history of Südzucker today.

From sowing and harvesting to sugar processing in the factory, our methods have been continuously refined, aligned and optimized. Together with beet growers, Südzucker has successfully driven forward many projects in the area of beet cultivation and logistics.

The basis for a good harvest is laid long before sowing begins – it starts with selecting seeds that are ideally suited to local conditions. Sowing usually takes place from mid-March.

### The beet as a sugar store

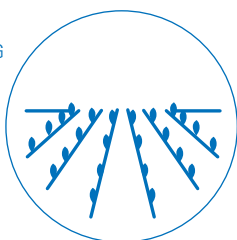
As the sugar beet grows, the plant produces sugar. Using energy from the sun, water and carbon dioxide produce glucose in the cells of the beet leaves, which is then converted into sucrose and ultimately stored in the root of the beet. That's how a grain that weighs a few milligrams can grow into a sugar beet that weighs between 700 grams to well over 1,000 grams.

The sugar beet harvest in September starts the sugar season, or the "campaign," as it is known. Harvesting, loading and transportation to the sugar factory are managed through a sophisticated logistics concept developed by Südzucker.

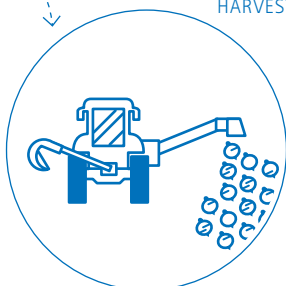
Once at the factory, every load of beets is analyzed. Sugar content and other important elements are determined, as well as the amount of soil still adhering to the beets and whether the beet leaves have been removed

### 1 GROWING SUGAR BEETS

1 A  
SOWING



1 B  
HARVEST



### 2 DELIVERY OF SUGAR BEETS



## A SUGAR BEET

75–78 %

Water

22–25 %

Dry matter, containing:

15–18 %

Sugar (sucrose)

Non-sugar materials

Botanically, the sugar beet plant for cultivation is a member of the goosefoot family. It is a cultivated form of the common beet and has been selectively bred to achieve a high sugar content. Back in 1836, for example, 20 kilograms of beets were still needed to produce one kilogram of sugar. Today, only seven kilograms are required. This makes the sugar beet the most important sugar plant in Europe.

Every part of the sugar beet is valuable: the substances other than sugar that are contained in the beet can be fully utilized. The water is used in the sugar factory, the beet pulp is processed to make animal feed, and the precipitated non-sugar materials are an ingredient in a valuable fertilizer.

There's even more sustainability behind all this

properly. After unloading and thorough washing, the sugar beets are sent directly to the processing or storage facility.

The sugar beets are sliced, pre-heated in a cossette scalding and then sent to the extraction tower. Water heated to 70°C extracts the sugar from the sugar beet cells. This produces the raw juice.

The cossettes – strips of sugar beet – from which the juice has been extracted are dried and processed into valuable animal feed. Lime and carbon dioxide are used to bind and precipitate out the

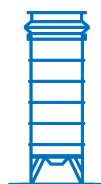
non-sugar materials. What remains is a clear, thin juice with a sugar content of about 16 %. This is thickened by heating in stages until a thick, golden brown juice with a sugar content of about 67 % is produced. The juice is boiled to form crystals. This is subsequently spun in centrifuges to separate out the residual syrup. The result is transparent sugar crystals, which refract light as white as snow. The finished sugar is dried, cooled and stored in sugar silos.

## 3 SUGAR PROCESSING

3 B  
WASHING



3 D  
EXTRACTION  
IN TOWER



3 A  
UNLOADING



3 C  
CHOPPING INTO SLICES



# OUR BUSINESS AND SUSTAINABILITY ARE INSEPARABLE: THAT'S WHY WE SHARE OUR KNOWLEDGE

From growing agricultural raw materials, producing high-quality foods to logistics – the Südzucker Group has been bringing together a broad range of expertise for over five decades. We aspire to connect and share this knowledge in the spirit of sustainability.

It's now been 25 years since Südzucker developed the motto "Nature is our partner" for our business; we have been putting this ideal into practice ever since. Today, the tenets of this guiding principle are anchored in our corporate strategy through the concept of sustainability. The following key objectives apply to our beet cultivation: We aim to harvest high-quality crops while maintaining a high yield, protect the environment, preserve nature for generations to come and generate high value in rural areas. Both the economy and the environment benefit from the achievement of these goals.

## **From practice to research and back again**

In order to use the expertise generated in the past decades to best effect, a knowledge management system has been established that enables all parties to access various areas and all directions, whether it is to kick off a new research project, to retrieve information and put it into practice, or to supplement existing knowledge with practical experience.

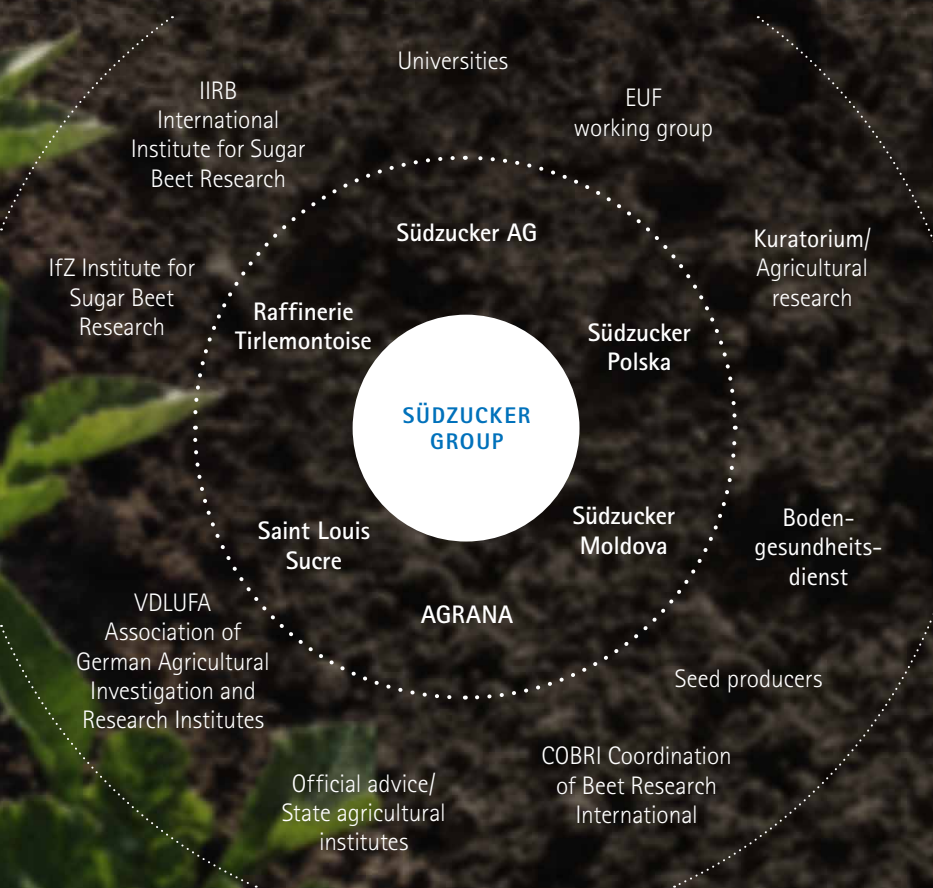
Several channels are used to guarantee fast and effective communication: events such as the annual winter meetings (Südzucker, growers, associations, study groups) or Kuratorium meetings, where the focus is on exchanging ideas face to face, one-to-one advice on the field, the sugar beet gazette, which regularly reports on new developments and findings, fax, cell phone text messages, apps, Facebook for real-time information or the online portal [www.bisz.suedzucker.de](http://www.bisz.suedzucker.de) (news, leaf disease monitoring, online order service, field documentation, Rüben-profi etc.). There's a communication channel to suit everyone among all these options.

Our sustainability management system is constantly being refocused and restructured to meet existing and newly emerging needs. The system is based on international sustainability guidelines, for example the Global Reporting Initiative (GRI) guidelines.



## AN INTERNATIONAL NETWORK FOR KNOWLEDGE TRANSFER

What started out with a small number of participants has today developed into a large international network from all kinds of areas both within and outside the Südzucker Group. Südzucker has established a systematic framework for this network. The findings from research work initiated and financed by Südzucker also feed into this network.



# OUR NETWORK FOR SUSTAINED SUCCESS

CONSISTENTLY  
HIGH YIELDS  
AND GOOD  
QUALITY



## TRIALS

Each year, between 120 and 130 field trials on a wide variety of tasks are conducted by study groups in the south of Germany alone. These include trials on varieties, trials on seed protection and weed control as well as plant cultivation issues. Every cultivation trial takes into account various forms of testing.

To ensure reliable results, the trial varieties are repeated multiple times at the individual site, and the trials themselves are performed at multiple sites. In total, this means around 7,500 small plots, which are cared for throughout the year, are dug up and then investigated according to the particular focus of the trial.





## USE OF NITROGEN FERTILIZERS TODAY

-44%

# 100 kg/ha

[1980s: 180 kg/ha]



## ADAPTING FERTILIZATION

The test developed by the Bodengesundheitsdienst using the EUF (electro-ultrafiltration) method investigates soil samples for nutrients and then makes appropriate fertilizer recommendations. As a result, only the precise amount of fertilizer is used that the plant really needs and can absorb.

This has made it possible to substantially reduce the amounts of fertilizer used and at the same time to increase the quality of the sugar beets – good for the environment and good for the farmer. In this way, it also became possible to reduce the residual nitrate content in the soil – in the case of sugar beets, it is over 50 % lower than for many other crop plants.



## PROTECTING THE ENVIRONMENT



## CONSERVING SOIL

Since 1990, ecological and economic implications of various soil tillage systems have been investigated in extensive trials by Südzucker and the Institute for Sugar Beet Research (IfZ). This means that today's farmers can apply soil-conserving methods based on these results, such as winter greening, mulch seeding and special tires, which improve soil health and fertility among other things, and also avoid erosion.



## MULCH SEEDING AREA TODAY

+370%

# 47 %

[1990s: 10 %]



### CROP PROTECTION

Depending on the site and the year, fungi can attack the foliage of the sugar beet and cause considerable yield losses. To prevent this, sugar beets must be protected with fungicide. Fungicides were once mainly used as a precautionary measure.

Threshold values for infestation control of leaf diseases have been developed in studies. Depending on the point in time, varying ratios of infested leaves can be tolerated in a sugar beet crop. Fungicides only must be used when these values are exceeded. Compared with precautionary control, on average one less application of fungicide is necessary today.



#### SOIL ADHESION TODAY

-40%

6%

[1990s: 10%]



### HARVESTING AND WASHING BEETS AT THE SIDE OF THE FIELD

Less soil on the sugar beets means lower volumes to transport. By developing the appropriate harvesting and loading machines as well as protecting clamps, it has been possible to reduce soil adhesion from around 10 % at the end of the 1990s to around 6 % today. In a sugar factory that processes 1.2 million tonnes of sugar beets, this equates to around 120,000 tonnes of soil that remain on the field every year. Fewer trucks, lower fuel consumption, less traffic, lower environmental impact.



ENSURING  
CREATION OF  
HIGH VALUE IN  
RURAL AREAS



FUEL CONSUMPTION  
TODAY

-22%

35 l/100 km

[1990s: 45 l/100 km]



## OPTIMIZING LOGISTICS

Sugar factories are commercial operations in which large volumes of goods are handled. During the campaign, on average 1.2 million tonnes of sugar beets are processed in a factory; this equates to around 48,000 trucks.

A multitude of measures help keep the impact associated with transporting the sugar beets, the other materials required and the sugar as low as possible. Building on experience, a system has been developed to make delivery from field to factory as efficient as possible. Unnecessary trips and waiting times are avoided, drivers are trained in environmentally friendly and considerate driving behavior, and modern trucks with high load capacities are used.

LOAD CAPACITY  
TODAY

+25%

27.5 t/truck

[1990s: 22 t/truck]

CONSERVING  
NATURE FOR  
GENERATIONS  
TO COME

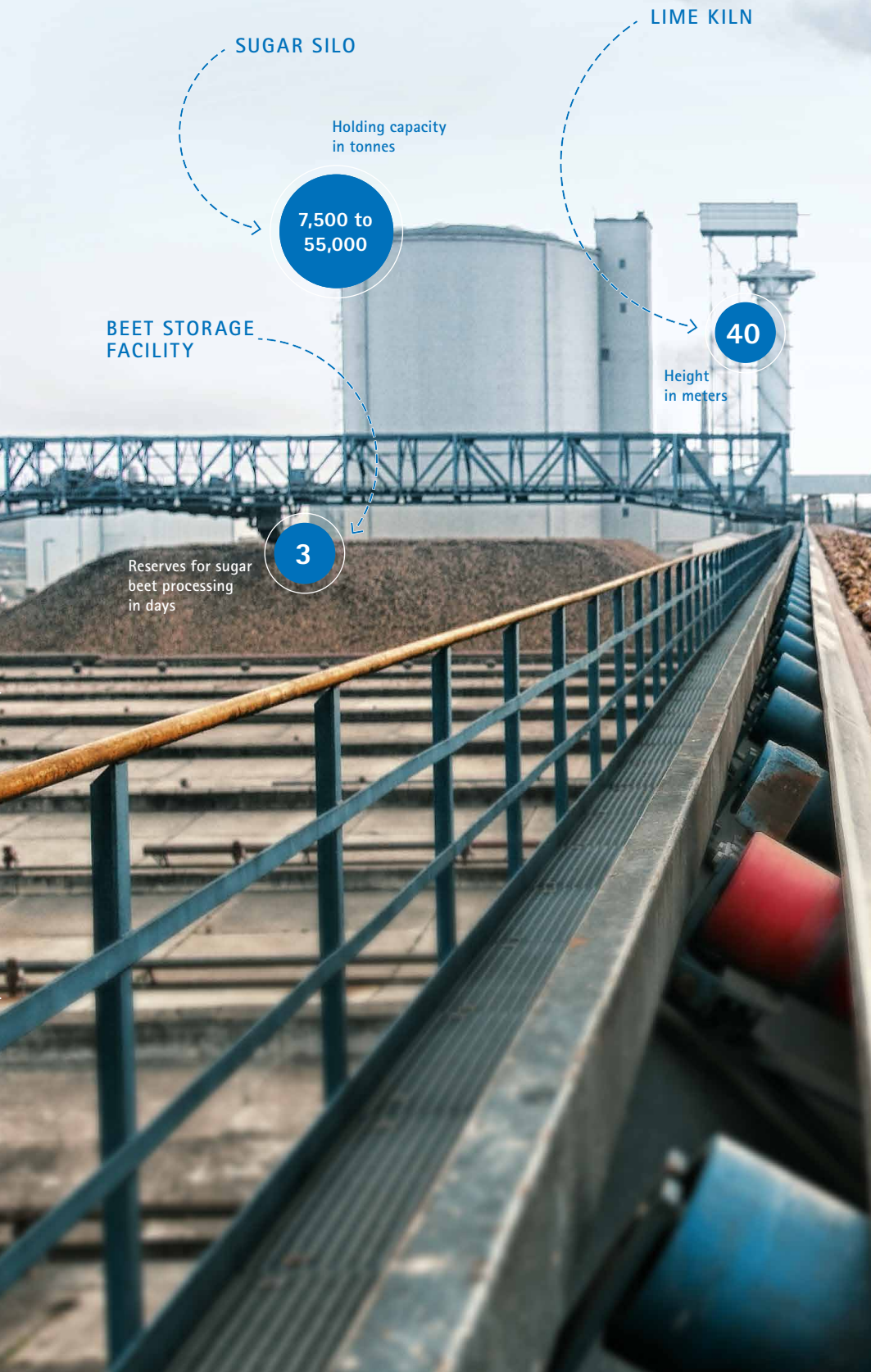


## SAVING WATER

Internal water circulation and making use of the water brought into the factory with the sugar beet ensure economical and efficient use of water. A large part of the water is used several times during the sugar production process before it is purified and fed back into the natural cycle.

## RAIN AM LECH SUGAR FACTORY

As one of the nine Südzucker plants in Germany, the Rain sugar factory also implements a zero-waste policy for processing sugar beets – 24 hours a day during the campaign.



SUGAR SILO

Holding capacity  
in tonnes

7,500 to  
55,000

LIME KILN

40

Height  
in meters

BEET STORAGE  
FACILITY

3

Reserves for sugar  
beet processing  
in days





SUGAR BEET  
CONVEYOR BELT

WASHING FACILITIES

650

Total length  
at the plant in meters

500

Washing capacity  
in tonnes per hour

## ON THE SUGAR TRAIL: THIS SWEET CRYSTAL IS AN IMPORTANT FORCE IN OUR ECONOMY

As a company rich in tradition and a market leader in European sugar production, Südzucker AG has been an important employer and economic force in rural areas of Europe for more than 175 years. This is where most of our employees have their workplaces, this is where investments and maintenance are carried out by Südzucker suppliers, this is where a large part of our taxes go, and above all, this is the place our beet farmers call home.

As part of a study by economic research institute WifOR published in 2013, the economic impacts of Südzucker on the rural areas in the regions where the sugar factories are located were investigated and calculated for each sugar factory.

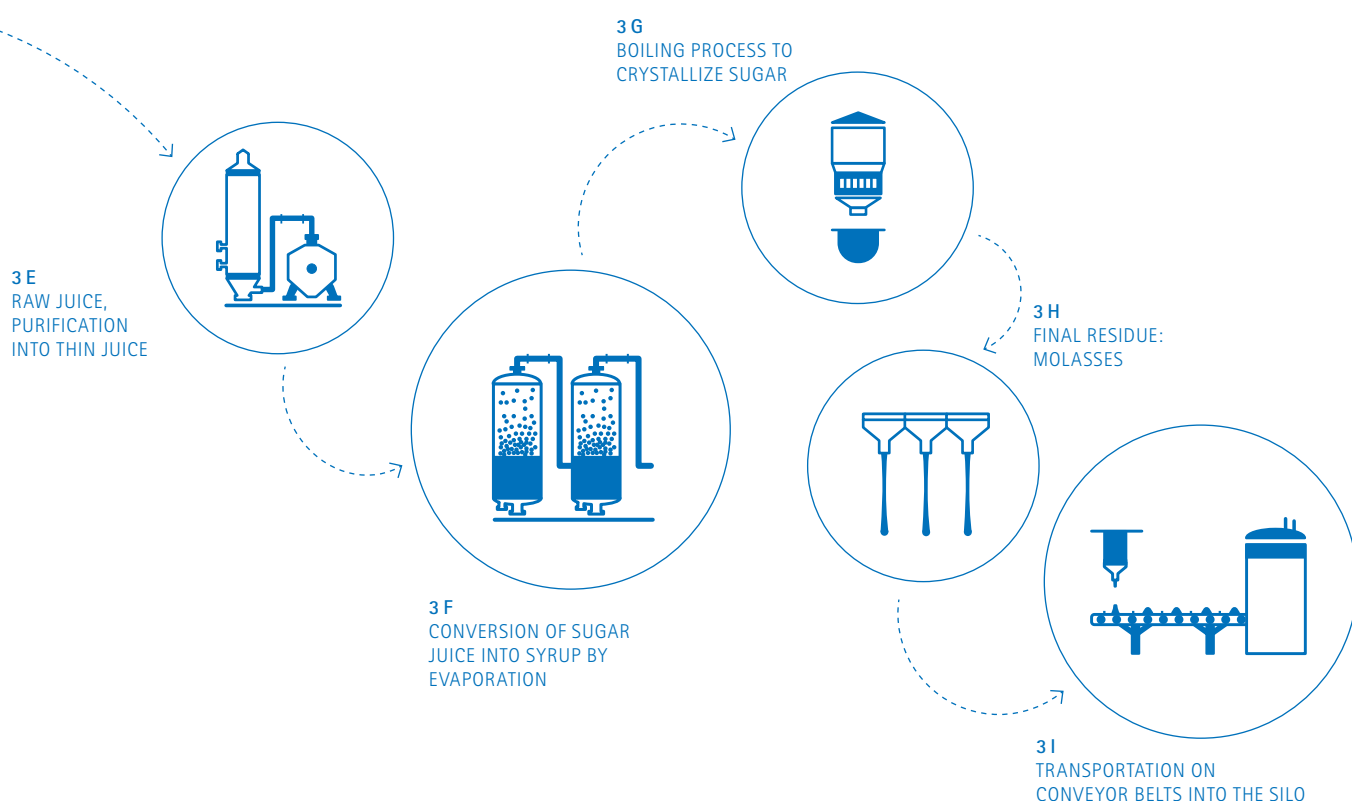
In total, the direct and indirect gross value generated by Südzucker's sugar business amounts to

around € 4 billion in the EU. Of this amount, 83 %, i.e. around € 3.3 billion, are generated in rural areas.

The sugar segment has around 8,000 employees, which equates to around 82,000 people being directly or indirectly employed in the industry. A total 82 % of this impact on employment, in other words around 67,000 jobs, is located in rural areas.

The significance of every single sugar factory is enormous for the region involved:

- Up to 5,000 direct and indirect workers per sugar factory
- Up to 11.5 % of the total gross value added of a region per sugar factory
- Up to € 250 million of value creation effect per sugar factory



# SÜDZUCKER PRODUCTION EUROPE

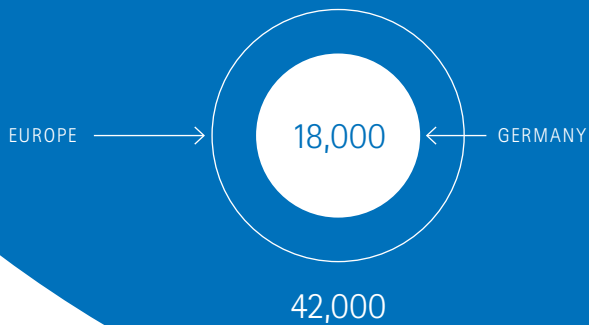
## SUGAR FACTORIES/ REFINERIES

32

- Headquarters Mannheim
- Sugar factories/Refineries

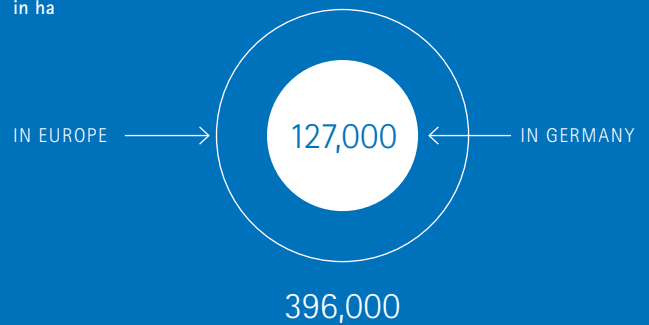


## SUGAR BEET GROWERS

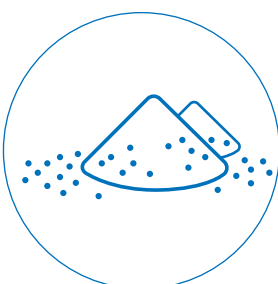


## CULTIVATION AREA

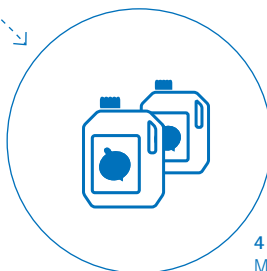
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## 4 DISTRIBUTION



4 A  
SUGAR AS A  
RAW MATERIAL



4 B  
MOLASSES: ANIMAL FEED,  
ALCOHOLIC FERMENTATION,  
PRODUCTION OF BAKING  
YEAST

4 C  
MARKETING TO  
END USERS






# I FEEL GOOD: WITH NATURAL CHICORY ROOT EXTRACT

Natural food additives produced by the Südzucker subsidiary BENEÓ are in great demand in the market for health foods, for both people and animals. And our other specialties – Freiberger Pizza, portion-sized packages from PortionPack Europe and our starch products – are equally popular.



SPECIAL PRODUCTS SEGMENT





NATURAL FIBER FROM THE  
CHICORY ROOT PROMOTES  
HEALTHY DIGESTION AND  
ENSURES EXCEPTIONAL  
TASTE AT THE END OF THE  
VALUE CHAIN, INCLUDING  
IN CEREALS.

## INULIN: A POPULAR FIBER

From June to October, roadsides are often adorned with the flowers of the chicory plant – they are very pretty and were even named Germany's Flower of the Year in 2009. However, few people know that the flowers belong to the same family of plants as chicory and chicory root. Chicory is a popular ingredient for salads and is often eaten as a vegetable, but what can you do with its root?

Roasted chicory roots were once used to add bulk to coffee, or even as a coffee replacement. Today it is enjoying a comeback as a source of the valuable soluble fibers inulin and oligofructose, which BENEØ extracts from the plant. Many varieties of fruit and vegetables contain these substances in small quantities. However, the chicory root has very high levels of both, which is what makes it so valuable to us.

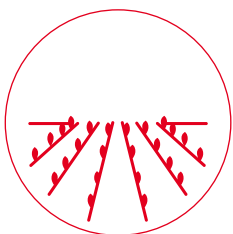
### **BENEØ relies on the quality of raw materials and research**

Compared to the sugar beet, chicory is a diva: That is true from the very beginning, when the seed, which measures just 2.5 millimeters in diameter, is sowed. It is extremely vulnerable to water shortage. Once the critical sprouting and rooting phase has passed, the young plant does not react well to temperatures below 10°C. And the harvest also requires delicacy: The chicory has to be grasped much lower down at the root and pulled out of the soil more slowly than the sugar beet.

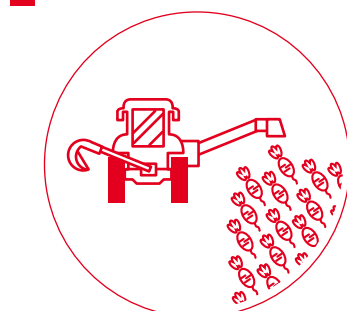
The quality of the root is the foundation for success. That is why BENEØ has close, long-term partnerships with farmers in Belgium and Chile to ensure sustainable value creation for farmer and manufacturer alike. A unique feature of our operation in Chile is the company-owned farm that once supplied the factory and is now also used for research and demonstration purposes.

Following delivery to the factory, the fiber is separated using a hot water extraction process very similar to that employed in the production of sugar

#### 1 SOWING



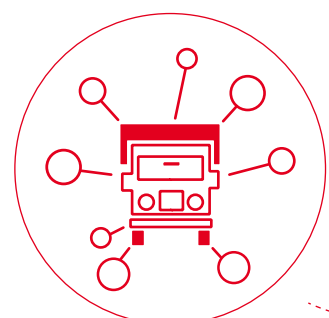
#### 2 FARMING AND HARVEST



#### 3 PROCESSING



#### 4 INTERNATIONAL SALES NETWORK





and then processed further to produce inulin and oligofructose. Both can be used in a number of products and are available in liquid or crystal form, depending on the intended application.

### THE CHICORY PLANT

Common chicory is a deep-rooted plant that belongs to the Asteraceae family. It has been used as a natural medicine since at least the Middle Ages.

Cultivated forms include chicory, radicchio and chicory root. With an average inulin and oligofructose content of 15–17 %, chicory root is today used as a raw material in the production of functional food ingredients.



Inulin is well known around the world and offers consumers and manufacturers a number of advantages: The consumer benefits from natural fiber and fat substitute and the manufacturer benefits from an excellent raw material for reduced-fat milk products and spreads. Oligofructose can be used to supplement fiber with sugar substitutes in baking, cereals and confectionery, allowing them to meet current demands as far as both taste and nutrition are concerned.

That means that BENEÓ has implemented a seed-to-product value chain that serves the long-term aim of improving nutrition for people and animals through natural raw materials, sustainable farming, low-impact production processes, scientifically proven benefits of ingredients and advanced technology for healthy food with outstanding flavor.

In order to meet increasing global demand, BENEÓ produces thousands of tonnes of inulin and oligofructose at its locations in Oreye, Belgium and Pemuco, Chile all year round – thanks to the reversal of the seasons in the different hemispheres.

#### 5 FURTHER PROCESSING BY FOOD MANUFACTURERS



5A  
BABY FOOD

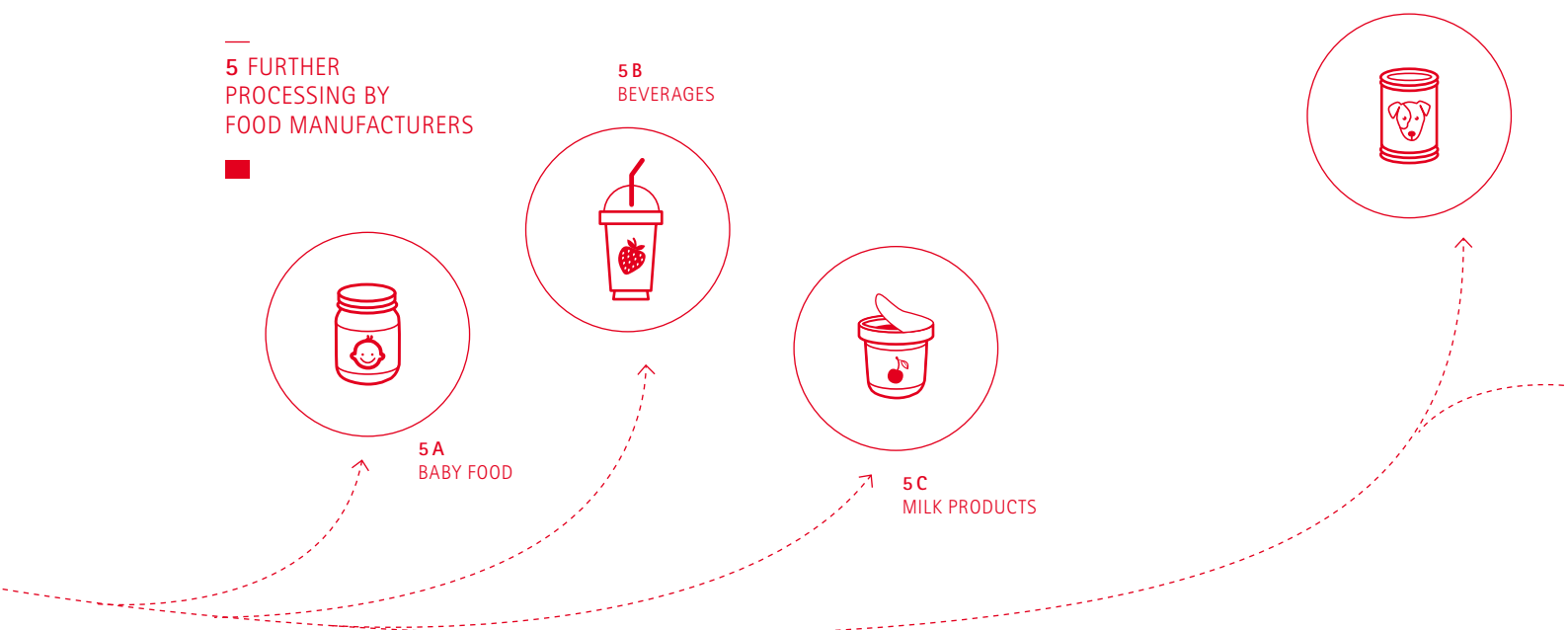


5B  
BEVERAGES



5C  
MILK PRODUCTS

#### 5D ANIMAL FOOD MANUFACTURERS



## OUR TASK: INGREDIENTS FOR HEALTHY NUTRITION

To meet this challenge, we carry out research around the world: Numerous studies conducted by renowned research institutions worldwide have documented the effectiveness of our products for digestive health, controlling weight and blood sugar, mineral uptake, burning fat and dental health. The BENEIO Institute commissions and coordinates nutritional studies, supports scientific exchange and offers expertise in the field of nutrition law. Thanks to its extensive experience in application technology and market and consumer research, BENEIO is able to support its clients in product development and thereby helps make food healthier and taste better.

The natural raw materials chicory, sugar beet, rice and wheat are the basis of BENEIO's product portfolio of fibers, functional carbohydrates, rice derivatives and gluten. Each of these product groups is characterized by unique selling points. The substances can also be combined very effectively in end products.

### More than just fiber

Inulin and oligofructose are used to add fiber – primarily in milk products, cereals, baked goods and food for small children. However, they also make good substitutes for fat or sugar, contribute to the improvement of digestive health and help contribute to weight loss. And inulin and oligofructose have an additional benefit: they ferment in the large intestine and provide sustenance for useful

bifidobacteria. The growth and activity of these bacteria are promoted in a targeted manner; the number of harmful bacteria is reduced, which helps to promote a healthy intestinal flora. The use of these and other functional additives helps the nutrition industry to meet demand from a large number of consumers for healthy, good-tasting foodstuffs.

### Tooth-friendly, low-calorie raw materials

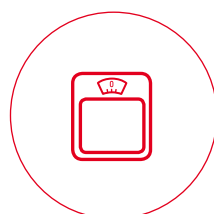
The carbohydrates Isomalt und Palatinose™, which are extracted from sugar beets, have many uses. Isomalt is the world's number one sugar substitute in candy. Its primary characteristics are that it is tooth-friendly, has a reduced calorie content and has a sweetness that resembles sugar. Chemically speaking, Palatinose™ is a sugar, but its nutritional and physiological effects are unique: because it is metabolized slowly, it provides carbohydrate energy over an extended period. That leads to improved fat burning and blood sugar regulation, recognized factors in the prevention of diabetes and obesity.

### Clean labeling

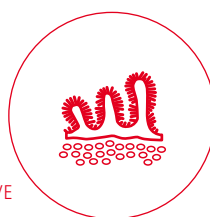
Rice derivatives meet consumer demand for clear, comprehensible clean label nutrition information and for gluten-, lactose- and allergen-free alternatives. They improve the flavor and texture of products and can be used as fat substitutes. Gluten is primarily used as a plant-based protein source for animal foods.

### RESEARCH AND CONSULTANCY WORK

WEIGHT  
CONTROL



DIGESTIVE  
HEALTH



BLOOD SUGAR  
REGULATION



DEVELOPMENT OF  
RECIPES FOR THE  
FOOD INDUSTRY



## BENEO WORLDWIDE

6 SELLING AGENCIES  
5 PRODUCTION LOCATIONS:  
ACTIVE IN MORE  
THAN 75 COUNTRIES



### VOLUMES PROCESSED BY BENEO

in t



5 E  
BAKED GOODS AND  
CEREALS





# THE TIMES THEY ARE A-CHANGIN': FUEL & SUSTENANCE – STRAIGHT FROM THE FIELD

Crude oil is limited, and large-scale cultivation of soy as a source of protein has negative consequences for old-growth forests. These are two global challenges that the Südzucker subsidiary CropEnergies meets with its European bioethanol value chain: ensuring mobility in a climate-friendly way and improving protein supply.





EXISTING LOGISTICS  
INFRASTRUCTURE AND  
FUEL STATIONS CAN BE  
USED TO MARKET  
BIOETHANOL.

## BIOETHANOL PRODUCTION: THE SAVER FORMULA WITH A FUTURE

In the spirit of the slogan of a well-known oil company, we were once urged to "put a tiger in our tank". Today, the gasoline types Super E5 and E10 are increasingly being replaced by bioethanol, which helps around 30 million vehicles run in Germany alone. Moreover, when bioethanol is produced, tonnes of valuable high-protein food and animal feed are yielded as a co-product.

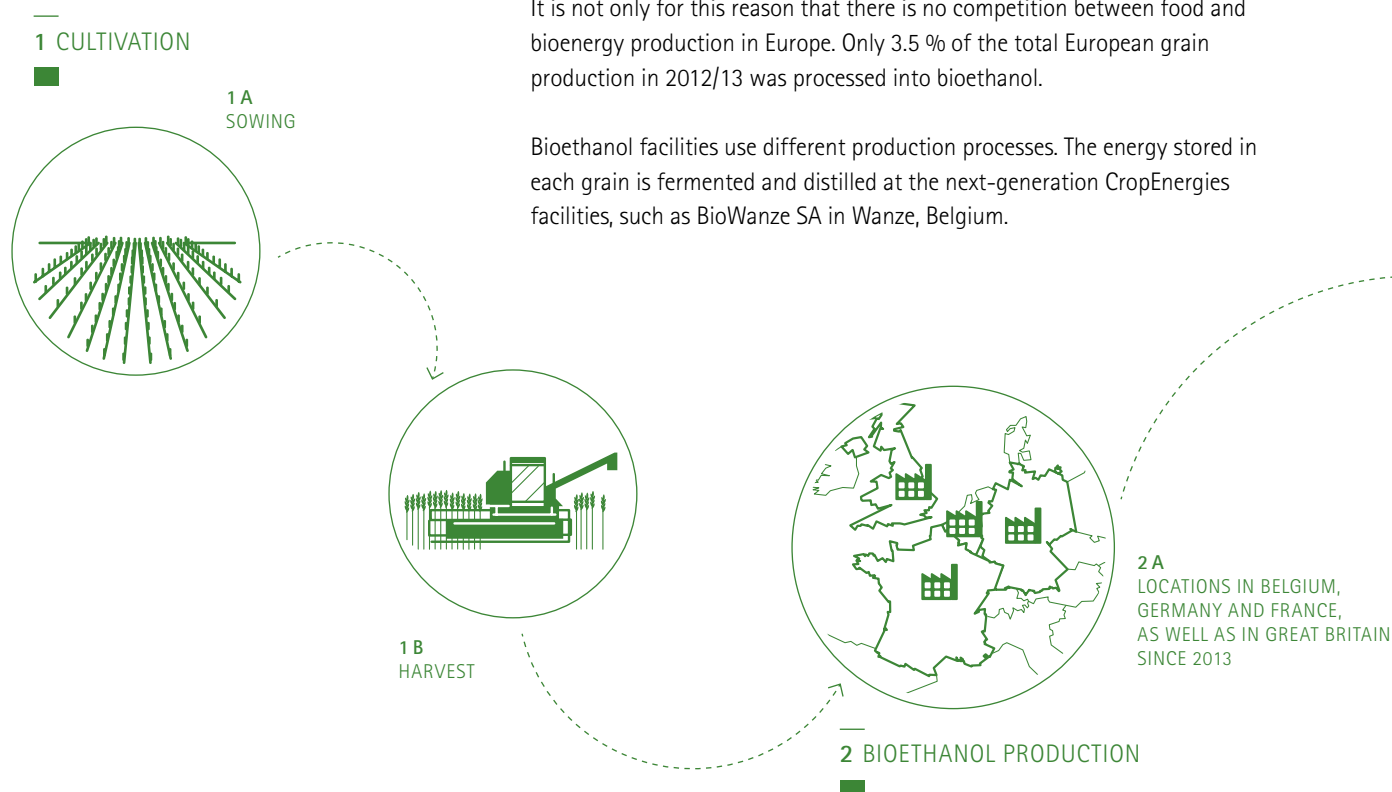
As one of the leading bioethanol producers in Europe, the Südzucker subsidiary CropEnergies currently has an annual production capacity of around 1.2 million m<sup>3</sup> for its main product, bioethanol, and more than 1 million tonnes of high-quality food and animal feed. These products are obtained from the renewable raw materials of feed grain and sugar beets, which are fully utilized.

This leads to savings on several fronts: It saves crude oil, since bioethanol is a sustainable alternative. It also means fewer imports of protein to Europe, since the protein products obtained replace a proportion of the imports of soy, for example. And last but not least, it saves up to 70 % of CO<sub>2</sub> emissions compared to fossil fuels, since bioethanol releases less carbon dioxide across the entire value chain – from farming and highly efficient production plants to engine combustion.

### Fermentation is the magic word

European bioethanol production itself begins with grain, for example, during the harvest in July and August. In Europe, bioethanol is mainly made from feed grain. It has a high starch content, which is then used to produce bioethanol. It is not only for this reason that there is no competition between food and bioenergy production in Europe. Only 3.5 % of the total European grain production in 2012/13 was processed into bioethanol.

Bioethanol facilities use different production processes. The energy stored in each grain is fermented and distilled at the next-generation CropEnergies facilities, such as BioWanze SA in Wanze, Belgium.





First, the delivered grain has to be cleaned and ground in a mill. The husk of the grain, known as the bran, is separated out and used at the biomass plant as a source of energy for the next processing phase.

### FEED GRAIN

Feed grain belongs to the grass family, grown for their starchy seeds worldwide. As the name indicates, feed grain is specifically used for animal feed.

Typical types of feed grain include triticale, maize and barley. Feed grain is a high-yielding crop that requires less fertilizer. In bioethanol production, feed grain is fully utilized.

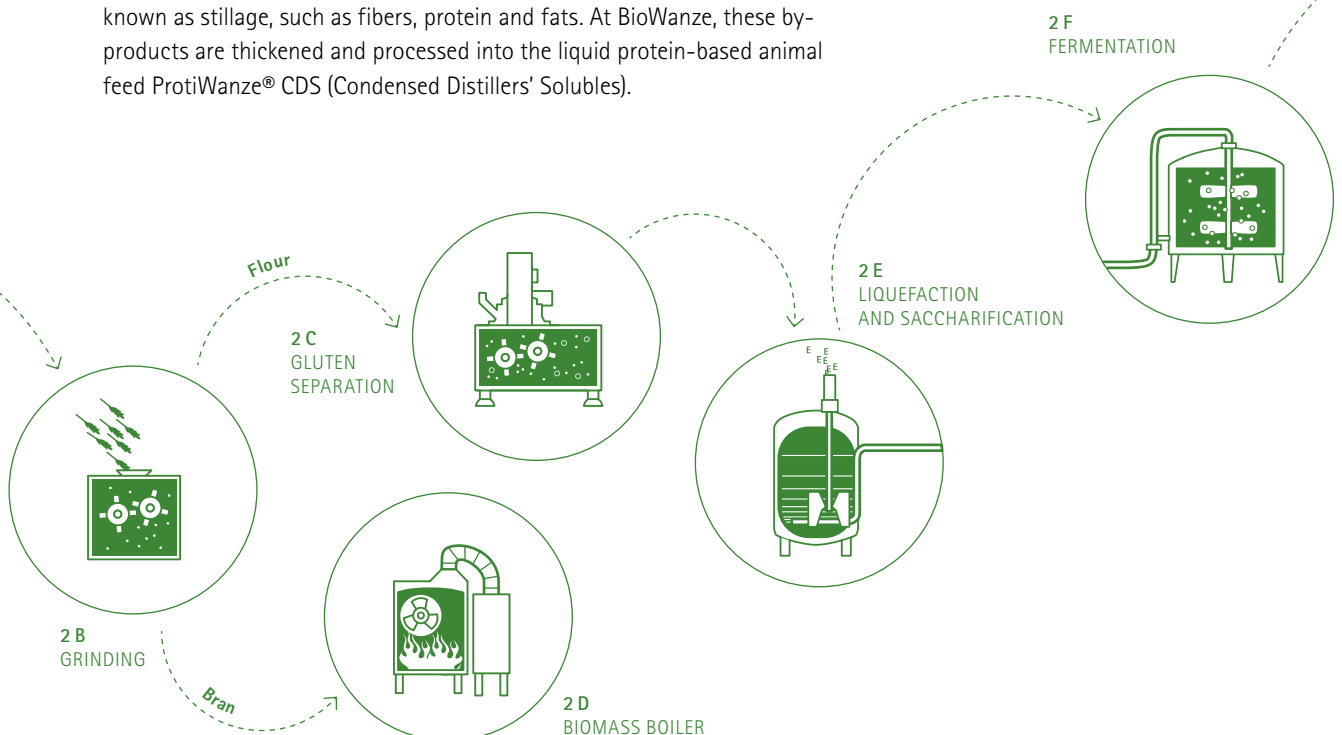


In the next step, gluten is separated out from the rest of the grain. Enzymes are then added that convert the starch into fermentable sugars.

The next step is the actual fermentation process in which yeast converts the sugars into alcohol and CO<sub>2</sub>. The resulting alcoholic mixture is known as mash.

Distillation then separates the alcohol from the other parts of the mash. This mixture is cleaned again, and the water is almost completely removed in the dehydration process, resulting in very pure bioethanol containing 99.7 % alcohol by volume.

Food and animal feed are obtained from the remaining plant constituents, known as stillage, such as fibers, protein and fats. At BioWanze, these by-products are thickened and processed into the liquid protein-based animal feed ProtiWanze® CDS (Condensed Distillers' Solubles).



## A MARKET IN TRANSITION: CROPENERGIES STRENGTHENS ITS MARKET POSITION

CropEnergies AG continues to see potential in the European bioethanol market. To this end, it significantly expanded its production capacity during the reporting period by acquiring the British bioethanol producer Ensus Limited, based in Yarm, Great Britain. The plant in the northeast of England, which was commissioned in 2010, has an annual capacity of 400,000 m<sup>3</sup> of bioethanol and 350,000 tonnes of dried protein animal feed (DDGS – Distillers' Dried Grains with Solubles), making it one of the largest of its kind in Europe.

Production also emits an annual 250,000 tonnes of CO<sub>2</sub>, which is delivered to an adjacent liquefaction plant where it is processed for use in the food and drinks industry.

### Own network expanded effectively

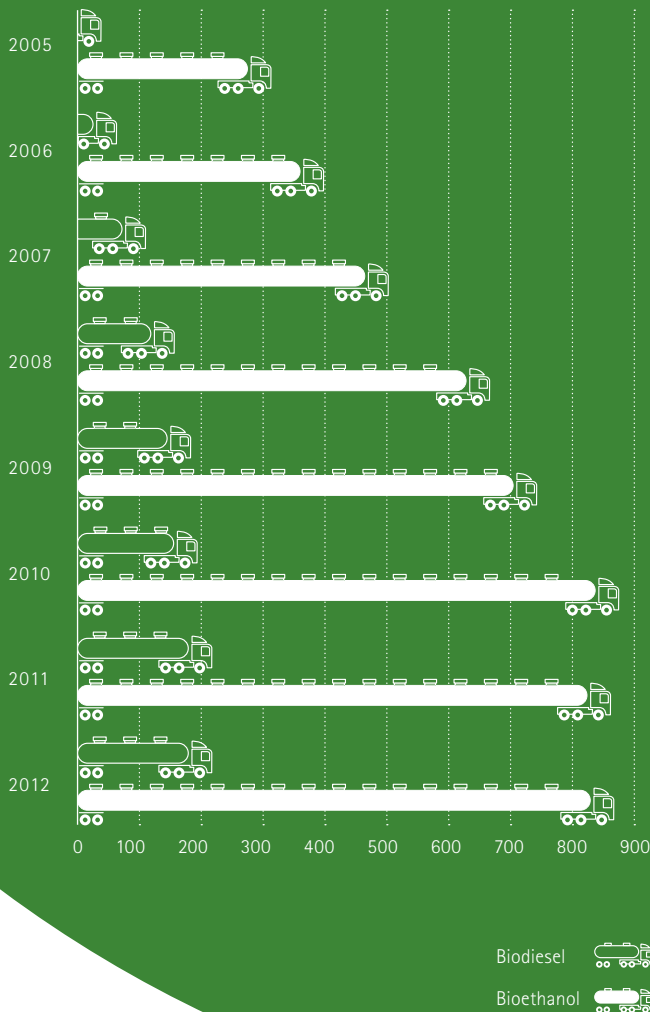
With the acquisition of Ensus, CropEnergies is strengthening its position as one of the three leading bioethanol producers in Europe and is increasing its annual production capacity by 50 % to more than 1.2 million m<sup>3</sup> of bioethanol. The subsidiary in Great Britain enhances CropEnergies' unique European production and logistics network, which already includes bioethanol facilities in Belgium, Germany and France and ranks as one of the top companies in terms of profitability and sustainability aspects. Ensus gives the company direct access to the British market, which is the third-largest market for bioethanol after Germany and France and the fifth-largest market for animal feed in the EU.



# GLOBAL MARKET FOR BIOETHANOL

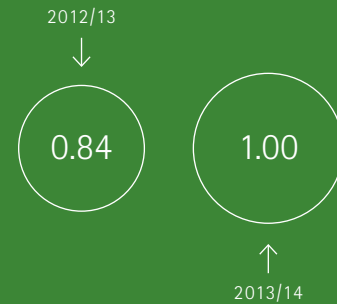
## BIOETHANOL PRODUCTION WORLDWIDE

in 100,000 m<sup>3</sup>



## CROPENERGIES BIOETHANOL VOLUME

in million m<sup>3</sup>



## CROPENERGIES PRODUCTION CAPACITY 2013/14

BIOETHANOL

1.2 million m<sup>3</sup>

FOOD AND ANIMAL FEED

>1 million t

## 4 FURTHER PROCESSING

4 A  
PROTEIN FOR THE FOOD AND  
ANIMAL FEED INDUSTRY



4 B  
CO<sub>2</sub>



4 C  
GASOLINE  
SUBSTITUTE





# STRAWBERRY FIELDS FOREVER: TURNING RAW FRUIT INTO RED GOLD

Whether in Africa, Europe or South America, strawberries and other fruit are in good hands worldwide with AGRANA, a Südzucker subsidiary.



FRUIT SEGMENT







STRAWBERRY YOGURT WITH FRUIT  
PREPARATIONS HAS CARVED OUT  
A PLACE IN REFRIGERATOR  
CABINETS ALL OVER THE WORLD.



## FRUIT PREPARATIONS: SWEET FRUIT FOR THE WORLD

Irrespective of cultural differences, strawberries are favorites all over the world. This puts them at the top of the chain in AGRANA's range of fruit preparations. To get that real strawberry taste for ice cream or yogurt, we develop recipes together with our clients – those insights also flow into our other fruit preparations.

In order to be able to guarantee a broad and continuous supply of these sweet red berries, the worldwide purchasing organization AGRANA Fruit Services keeps track of the different harvesting times in the northern and southern hemispheres. The harvesting cycle, which for strawberries is the same as the purchasing cycle, usually begins in October in Mexico, and then continues in Morocco and Spain in March before moving on to China in May and coming to a close in Poland in July.

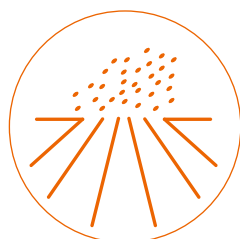
AGRANA acquires most of the fruit used in fruit preparations from primary processors who wash, clean and deep freeze the fresh fruit they receive from agricultural producers. In some countries, such as Argentina, Mexico, Morocco, Poland, Serbia and Ukraine, AGRANA operates its own facilities for the first processing stage in which the contract farmers prepare fresh fruits for manufacturing fruit preparations.

### **AGRANA fruit is found in one-third of fruit yogurts worldwide**

In a second phase, varying quantities of frozen fruits are refined at global AGRANA production sites according to the formulation or recipe required by the client and the area of application. Once converted into fruit preparations, they are used by the food processing industry, especially in dairy products, ice creams and baked goods. We also developed fruit preparations

### 1 STRAWBERRY CULTIVATION

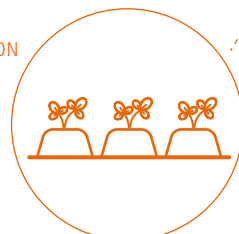
#### 1 A SOIL PREPARATION/ FERTILIZATION



#### 1 B SEEDLINGS



#### 1 C CULTIVATION





for the ice cream industry which remain liquid even at temperatures below freezing.

#### Fruity expertise

Either as a liquid or in pieces, AGRANA fruit preparations for the food industry are manufactured according to individual recipes that are developed in collaboration with our clients and draw on our research expertise. Naturally, they are also available in organic quality.

#### Rigorous quality control from raw fruit to final product

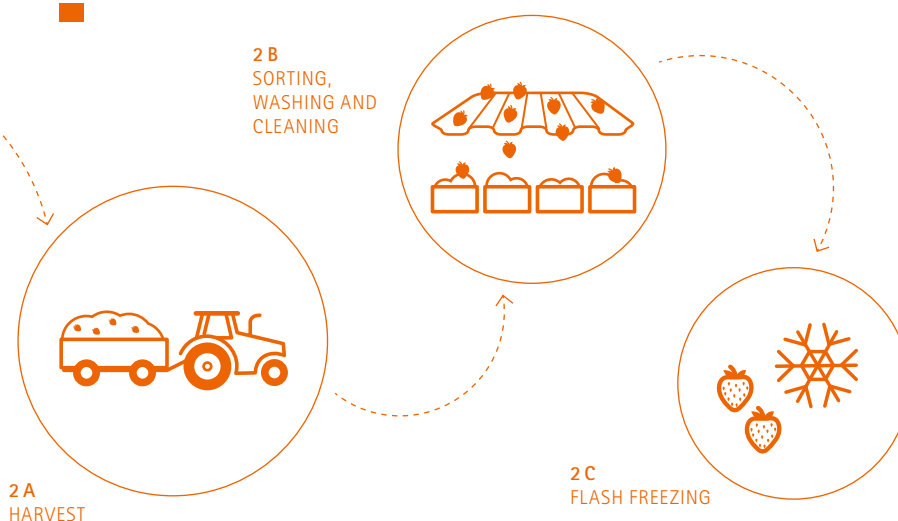
In many countries, AGRANA operates its own processing plants to optimize quality control. This is where freshly harvested fruits are sorted, cleaned and frozen. Around 40 % of fruit processed by AGRANA stem from our own processing plants or exclusive contract partners.

#### STRAWBERRY



Botanically speaking, strawberries are not berries but are among the pseudo-fruits or nut fruits of perennial plants. The actual fruits are the small yellow grains on the surface. The fleshy part that we eat is a thickened stem. But this fleshy part has it all: Besides having a higher vitamin C content than lemons and oranges, it is high in fiber, folic acid and minerals such as calcium, potassium, iron, zinc and copper.

## 2 STRAWBERRY HARVEST



## INTERNATIONAL SUSTAINABILITY CERTIFICATION: PILOT PROJECT IN MEXICO

Sustainable trading, including compliance with environmental and social criteria, is a core demand on management across the entire value chain – from raw material to finished product. AGRANA procures around 90 % of all its processed agricultural commodities within the EU, where, compared with other regions, strict social and environmental standards apply. For this reason, AGRANA is faced with the challenge of ensuring that sustainable production conditions are upheld and documented in countries outside Europe.

AGRANA can directly influence agricultural production through negotiations with its contracted suppliers. For years, projects to introduce sustainable agricultural practices and working conditions have been rolled out at various locations in emerging markets.

### Pilot project in Mexico is a success

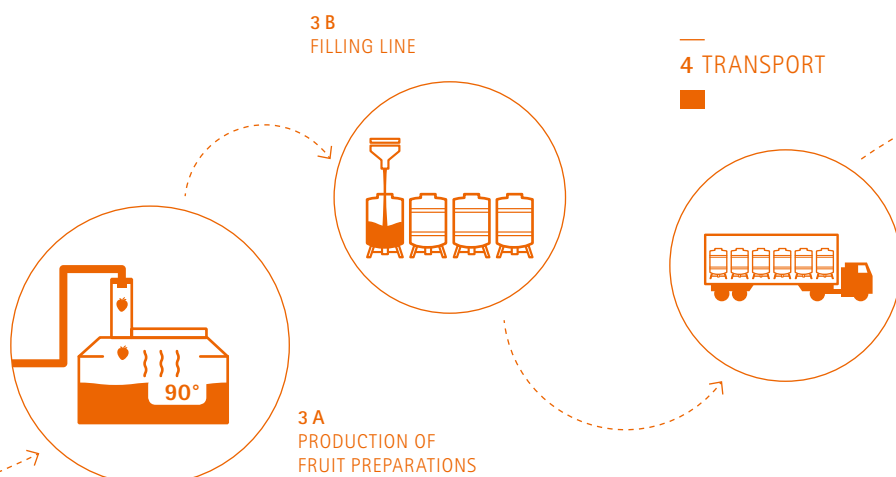
In 2012, a survey of current social and environmental standards among strawberry and blackberry suppliers was launched in Mexico. Since then, AGRANA has offered a certification program under the international Rainforest Alliance standards to interested contracting farms. The three-year project is the first of its kind in the Mexican state

of Michoacán. Its goal is to prepare the participating twenty strawberry and seven blackberry farms for initial certification and annual recertification and assist them in setting up the necessary infrastructure – the necessary advisory support and training is provided by AGRANA employees. The range of topics is highly diverse, ranging from sustainable agricultural practices such as fertilizers and pesticides, water and waste management, conservation of biodiversity, to labor law aspects and the implementation of health and safety measures, i.e. the use of protective clothing. Also, medical care, showers and bathrooms for the 1,100 farm workers have been discussed.

### All farms certified

All strawberry farms that took part had already passed the Rainforest Alliance audit by November 2013. A win-win situation for all stakeholders, this pilot project constitutes an example of sustainability in practice by improving working conditions for workers, protecting the environment and local biodiversity, creating a competitive advantage for participating contract farmers as well as providing a certified sustainable procurement source for AGRANA.

### 3 AGRANA PLANT



## AGRANA FRUIT FACTS

### TOP 3 APPLICATIONS OF AGRANA FRUIT PREPARATIONS

FRUIT YOGURTS



68 %

YOGURT DRINKS



15 %

ICE CREAM, BAKED  
GOODS, FOOD SERVICES



5 %

### TOP 5 FRUITS FRUIT PREPARATIONS



32 %

STRAWBERRIES



12 %

PEACHES



7 %

CHERRIES



7 %

BLUEBERRIES



4 %

MANGOS

### TOP 5 FRUITS FRUIT JUICE CONCENTRATE



92 %

APPLES



2 %

BLACK CURRANTS



2 %

SOUR CHERRIES



1 %

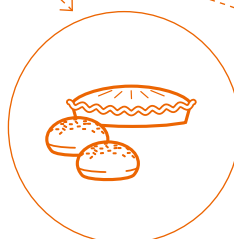
STRAWBERRIES



1 %

ARONIA BERRIES

5 A  
ICE CREAM



5 B  
BAKED GOODS

5 C  
DAIRY



5 FURTHER PROCESSING IN  
THE FOOD INDUSTRY





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