№ 2016

FROM BEET to SUGAR

CONTENTS

Did you know that 1kg of sugar is made from around 6kg of sugar beet?

Wiener Zucker
Austria

Koronás Cukor
Hungary

Korunný Cukor
Slovakia

Korunní Cukr
Czech Republic

Zahira
Bulgaria

Mărgăritar Zahăr
Romania

AGRAGOLD
Bosnia-Herzegovina

SUGAR BRANDS

ABOUT
AGRANA

Sugar, starch and fruit - it is in these three segments that AGRANA is globally successful. We add value to agricultural commodities to manufacture a wide range of industrial products and supply local producers as well as large international players, particularly those in the food industry. In its Sugar segment, AGRANA also addresses the end consumer market by means of country-specific brands such as Wiener Zucker in Austria.

AN ESSENTIAL PART OF DAILY LIFE.
AGRANA is the leading sugar producer in Central, Eastern and South-Eastern Europe, one of the leading suppliers of customer-specific starch products in Europe, and the global leader in the production of fruit preparations as well as the leading producer of fruit juice concentrates in Europe. Our products can be found not only in food, but also in textiles, cosmetic products and technical applications such as adhesives and petrol (bioethanol).

OUR EMPLOYEES ARE OUR MOST IMPORTANT RESOURCE. AGRANA maintains a global presence with around 8,600 employees based at 53 production facilities located on five continents. Their dedication and expertise ensure the company's success.

AGRANA IS A STOCK CORPORATION. The AGRANA Group has been listed on the Vienna Stock Exchange since 1991. AGRANA most recently generated consolidated revenues of approximately EUR 2.5 billion.

RESEARCH AND DEVELOPMENT. Innovations and the continual optimisation of technologies are the main focus of research and development at AGRANA. Our research and development tasks are mainly undertaken at the AGRANA Research & Innovation Center in Tulln|Austria.

SUSTAINABLE
BUSINESS

Due to our proximity to agricultural production, we feel a high degree of responsibility for the sustainable use of natural resources. For us, sustainability begins with the procurement of the agricultural commodities and intermediates that we process and encompasses energy and environmental aspects related to production processes,

the working conditions of employees, product responsibility aspects and ethical management as well as sustainable business practices.

In our 2015|16 financial year, AGRANA's Sugar segment processed 5.4 million tonnes of sugar beet sourced from contract beet growers located in the EU. Our cooperations with contract beet growers offer us the possibility to jointly improve environmental and social standards in the area of production relevant to the commodities which we subsequently process. It is for this reason that AGRANA has been a member of the Sustainable Agriculture Initiative (SAI) since 2014. Acting as an information platform presenting best practices as well as, for example, allowing producers the option of performing self-assessments, this initiative promotes the development and implementation of sustainable agricultural practices worldwide.

Besides the procurement of agricultural commodities, the continuous optimisation of energy consumption and energy efficiency as well as the responsible management of water also form important action areas for sustainability in the Sugar segment. The integration of an energy management system, the constant cleaning and recycling of water in addition to the highest possible utilisation rate of agricultural commodities in the form of main and by-products help us to achieve our sustainability targets in these areas.

Sustainable management forms an integral element of AGRANA's business model.

Focus on sustainability

Nearly **100%**

PROCESS ALMOST 100% of the agricultural raw materials used

Respect for all **STAKEHOLDERS**

Cooperation in the form of **LONG-TERM PARTNERSHIPS**

SUGAR

BEET GROWING AT AGRANA

Growing sugar beet enjoys a long tradition in Europe and in recent years has developed to become a highly specialised industrial segment.

In 2015, around 7,400 beet growers and contract partners in Central and Eastern Europe planted around 95,000 hectares of land with sugar beet for AGRANA. AGRANA maintains contractual partnerships with the growers in order to regulate the growing and purchase of the agreed quantities of sugar beet. Good cooperation and long-term partnerships between AGRANA and the beet growers are an essential element of achieving optimal yields.

The **VALUE-ADDED CHAIN** *starts with the procurement of the agricultural commodities. Details of the value-added chain in the Sugar segment can be found on the following pages.*

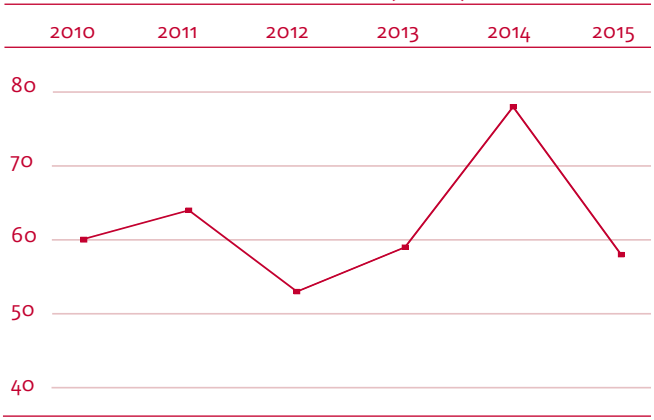
Around 80,000 sugar beet are harvested from a **GROWING AREA** *of one hectare.*

„MONT BLANC", a commodities-based programme to increase efficiency within the AGRANA Group, was launched in 2012. Based on the research results of the AGRANA Research & Innovation Centre (ARIC), the latest findings are implemented directly in beet growing to help contract farmers optimise beet growing. Mont Blanc aims to increase the yield of sugar per hectare by up to 20% by 2017 and also fosters sustainable action by means of the resource-sensitive use of growing aids to the benefit of farmers, the environment and society.

The key focus areas, which change annually, are communicated in a practical manner and via print media such as the Agrozucker (sugar) and Agrostärke (starch) specialist journals. Farmers can also visit one of the 70 demonstration farms spread across the entire growing area to get ideas for their own farm. Special field trips during the growing period highlight specific improvement options.

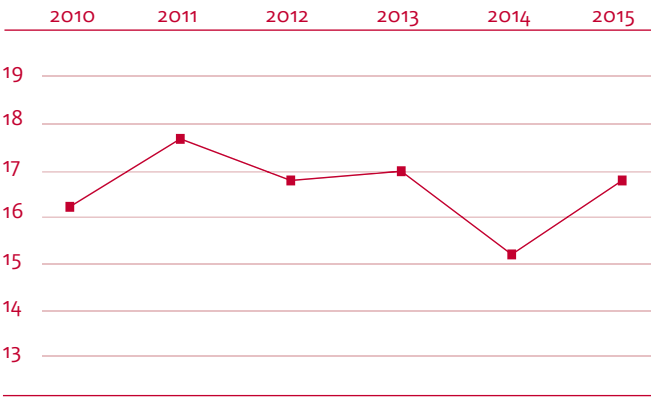
With the aid of the electro-ultra-filtration (EUF) method developed by AGRANA, a method which investigates the soil, it has been possible to optimise the use of nitrogen-based fertilisers in sugar beet growing over the past four decades, leading to reductions of up to two thirds. This method has also resulted in an increase in the sugar yield and improved the quality of Austria sugar beet, which is now among the best both in Europe and worldwide.

AVERAGE SUGAR BEET YIELDS (T/HA)



in the AGRANA Group

SUGAR CONTENT IN % POL *(POLARISATION)*



in the AGRANA Group

JANUARY

FEBRUARY

MARCH

APRIL

THE SUGAR BEET

GROWING CALENDAR

JANUARY The winter meetings organised by AGRANA's procurement department in January offer all sugar beet growers the possibility to receive specialist information for the new season at first hand. AGRANA farmers operating demonstration farms from all of the growing regions discuss the trials planned for the coming years. The practical information obtained as a result is passed on to all farmers.

FEBRUARY The seeds can be ordered online via the commodities information system **(ris.agrana.com)**. The seeds, which are specially produced in Austria, are tailored to the specific location-based requirements of the farms and continuously improved. The purchase agreements between AGRANA and every single beet grower are concluded at the annual contracting meetings.

MARCH The beet planting season begins as soon as the temperatures rise and the days become longer. AGRANA offers farmers the option of a seed inspection performed by specialists in order to ensure that these are in perfect condition when sown. Provided that no direct sowing of the seeds takes place after harvesting a catch crop, the land needs to be tilled before sowing. The catch crop which had previously been on the fields has by this time died of frost and therefore provides protection from the wind and erosion and is also a good source of nutrients for earthworms and microorganisms.

APRIL The sugar beet seeds are sown in the period between mid-March and mid-April, depending on the climate and the soil moisture level. Around 100,000 seeds are sown in rows. The rows are separated from each other by 45 - 50 cm. A sugar beet seed is sown around every 20 cm. The seed grower, Österreichische Rübensamenzucht, grows the beet seeds offered and sown in Austria.

MAY Herbicides and equipment-based methods are used to protect the beet fields from weeds. The best results are obtained by treating weeds at the cotyledon stage of growth whenever possible. AGRANA also offers the farmers various services in order to ensure the efficient and environmentally sensitive use of herbicides.

JUNE Temperatures averaging around 18 °C are ideal for the development of the foliage, allowing the plant to produce up to three new leaves per week. The foliage of the plants generally touches that of its neighbours around the end of June. This is an important parameter for the healthy growth of the sugar beet. It is at this point in time that AGRANA's procurement department organises field

MAY

JUNE

JULY

AUGUST

trips with the farmers in order to jointly identify carefully selected plant management methods.

JULY The growth of the sugar beet plant during the growing season is at risk not only from weeds but also from diseases and pests. Due to the prevailing climate conditions, cercospora fungal infection, which cause spots on the leaves, is the most important leaf-based disease affecting sugar beet growing in Europe. The yield of the sugar beet plant can only be guaranteed through the optimal use of fungicides. For this purpose, AGRANA employs the cercospora monitoring system **www.betaexpert.at** according to which farms regularly inspect their fields for signs of the disease and keep exact records of their use of fungicide in order to ensure the environmentally sensitive use of pesticides.

AUGUST This is the period during which the sugar beet field enjoys the highest growth rate. The beet already have a sugar content of around 15% and, under favourable conditions, grow in size daily. Now is also the time for AGRANA's procurement department to carry out so-called test harvests in order to be able to forecast the sugar beet and sugar yields. At selected sites, an average of 20 sugar beet are harvested, weighed and subsequently analysed for their sugar and non-sugar contents in the AGRANA laboratory. The parameters of the five test harvests carried out between the beginning of July and the beginning of October provide a good indication of the upcoming campaign and a reliable basis for multi-year comparisons.

SEPTEMBER The sugar beet season is slowly coming to a close. At harvest time, a single sugar beet weighs between 0.7 and 0.8 kilogrammes and consists mainly of water and around 18% sugar. An average of 69 to 72 tonnes of sugar beet or up to 13 tonnes of sugar can be obtained from one hectare. During the growing season, the sugar beet absorb around 18 tonnes of carbon dioxide per hectare and produce around 15 million litres of oxygen on an area the size of a football pitch. This is equivalent to the volume consumed by around 60 people during the course of a year. The sugar beet harvest starts in mid-September and finishes in mid-December. State-of-the-art technology is used during the harvesting procedure in order to remove the foliage and soil and to leave these on the field. The fertilisers produced during the subsequent production process are also distributed on the field. Closed loop management in practice.

Austria's largest agricultural fair for sugar beet, cereals and potatoes, BETAEXPO, takes place in Tulln in **JUNE AND SEPTEMBER OF EVERY YEAR.**

SEPTEMBER

OCTOBER

NOVEMBER

DECEMBER

OCTOBER Automatic harvesting machines harvest up to six rows at once. The harvested beet are transported to one of the 60 beet storage sites by the farmers or deposited at the edge of the field and delivered directly to the factory later. The beet storage sites are regularly monitored with regard to temperature and storage conditions in order to ensure high beet quality levels. Samples are taken and analysed when the beet are delivered. The sugar content can be as high as 20% and this represents a key quality-related parameter.

NOVEMBER The harvested and stored beet are now processed in the sugar refinery. Sugar beet logistics aims in particular to ensure the shortest possible routes and just-in-time delivery.

DECEMBER The work on the fields has now been completed and all of the sugar beet have been harvested and stored. The fields which will be planted with sugar beet in the coming growing season have already been selected and prepared. Catch crops, for example, now have time to wilt as a result of the low temperatures and, as due to frost damage, ensure the perfect condition of the soil ready for the new planting season in the spring.

12,000 tonnes → *240 railway waggons*

Around 12,000 tonnes of sugar beet are processed per day at every sugar refinery **IN AUSTRIA**.
This is equivalent to around 240 railway waggons each loaded with 50 tonnes.

Around 44% of the sugar beet moved in Austria is **TRANSPORTED ENVIRONMENTALLY** *sensitively by rail.*

SUGAR BEET GROWING

THE SMALLEST

SUGAR FACTORY

THE SUGAR BEET PLANT *(beta vulgaris saccharifera) is a biennial plant belonging to the goosefoot family. The taproot, the so-called beet, which is used to produce sugar, forms during the growing phase in the first year. A flower and seeds form during the growing phase of the second year. This relies on the sugar stored in the beet. With a sugar concentration of 16 to 20%, the sugar beet offers the highest yield among sugar-producing plants (sugar beet and sugar cane). The water content is around 75%.*

LEAVES OF THE SUGAR BEET

With the aid of solar energy and the chlorophyll in its leaves, the sugar beet plant converts carbon dioxide from the air, water and minerals in the soil into sugar. This process is called photosynthesis. The sugar beet foliage are left on the fields during harvesting.

HEAD OF THE SUGAR BEET

The head of the sugar beet plant, from where the leaves branch off, contains many non-sugar materials and therefore needs to be removed during harvesting.

ROOT OF THE SUGAR BEET

The sugar produced during photosynthesis is stored in the root of the sugar beet. The lighter areas are those in which the concentration of sugar is particularly high.

Sugar content:
16-20 %

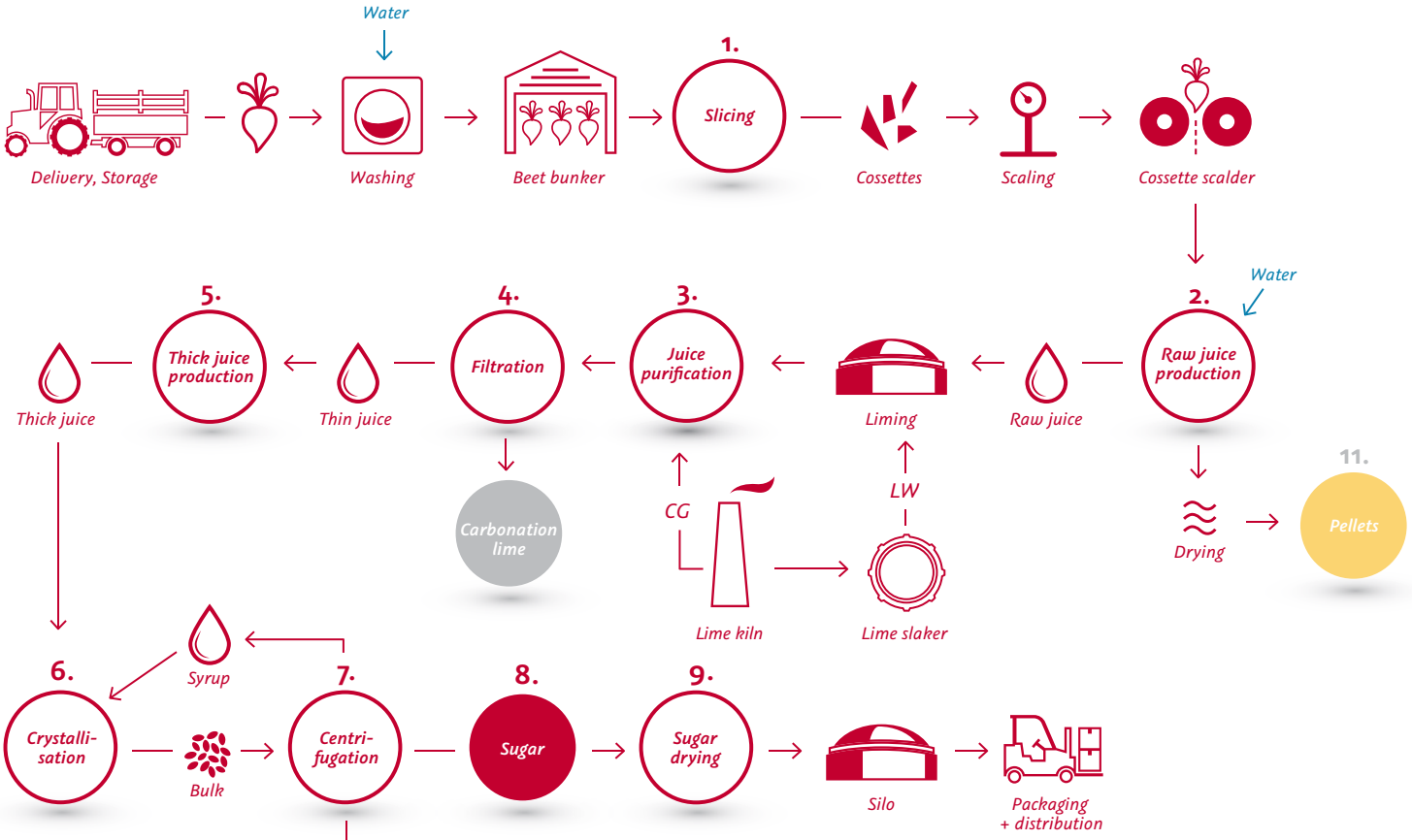
Root length:
20-30 cm

Weight approx.:
0.8 kg

STAGES OF

SUGAR PRODUCTION

*The **WATER** which is naturally contained in the sugar beet is used both in the production process as well as for transporting and cleaning the sugar beet. It is repeatedly cleaned and reused in a continuous cycle.*



LW = Lime wash
CG = Carbonation gas

The HACCP (hazard analysis and critical points) concept is applied to mitigate the risks associated with the production of sugar.

After being washed carefully and temporarily stored in the beet bunker, the sugar beet are subsequently processed.

1. SLICING Slicing machines cut the beets into strips known as cossettes which have an average sugar content of between 16 and 20%.

2. RAW JUICE PRODUCTION The sugar is extracted from the cossettes by means of hot water (around 70 °C) in a diffuser, with the cossettes moving in the opposite direction to the water flow (counter-flow-principle), in a process known as extraction. The raw juice or liquor obtained contains around 98% of the sugar in the sugar beet as well as organic and inorganic constituents (so-called non-sugars) from the beet.

3. JUICE PURIFICATION The non-sugars in the raw juice are bound and extracted by means of the natural substances lime (CaO) and carbonic acid gas (CO_2) which are produced in the site's own lime kiln.

4. FILTRATION The flocculatable insoluble non-sugars and the lime are filtered off in filter units. The filtrate is known as thin juice and the filter residue as carbonation-lime. This is an important soil improver and fertilizer which is spread on the fields.

5. THICK JUICE PRODUCTION The thin juice is evaporated in hour-long steaming process to produce thick juice. The operation of on-site power plants provides the considerable quantities of energy needed for sugar production. The steam produced in the high-pressure boilers is used in the turbogenerators to produce electricity. The waste steam from the turbines is used as process heat (cogeneration) in order to heat the evaporator station.

6. CRISTALLISATION The thick juice is thickened further in the boiling-pans under vacuum. The crystallisation process is triggered by adding (spiking) the thick juice with finely ground sugar. Further evaporation allows the crystals to grow to the desired size.

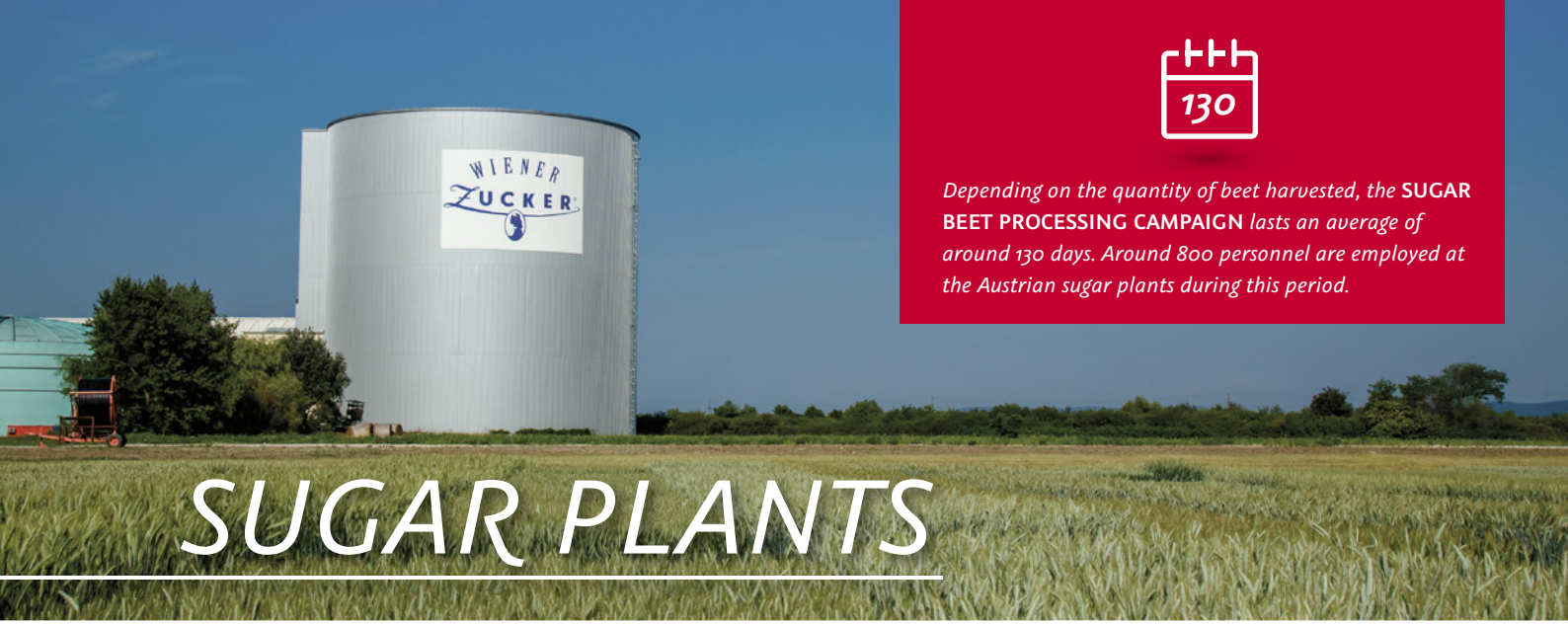
7. CENTRIFUGAL The sugar crystals are seperated from the syrup by means of centrifuging. The separated syrup is subjected to a further two crystallisation process.

8. SUGAR The pure, crystal-clear sugar appears white when subjected to white light. White sugar contains at least 99.7% sucrose. The remainder is in effect moisture.

9. SUGAR DRYING White sugar is dried in an air stream, cooled and stored in silos. In its many forms and packaged in numerous different household and industrial volumes, sugar is an important nutritional and semi-luxury foodstuff which then makes its way to the end consumer.

10. MOLASSES The syrup separated off during the final crystallisation step is known as molasses. The molasses contains the non-crystallised sugar (6-9% of the sugar content of the beet) as well as the soluble non-sugars from the sugar beet. Molasses is a valuable ingredient for the baking yeast and animal feed industry as well as for the production of alcohol.

11. PELLETS The cossettes from which the sugar juice is derived in the extraction tower are mechanically pressed and, following the addition of molasses, dried in a drying tunnel before being pelleted and sold as animal feed.



130

Depending on the quantity of beet harvested, the **SUGAR BEET PROCESSING CAMPAIGN** *lasts an average of around 130 days. Around 800 personnel are employed at the Austrian sugar plants during this period.*

SUGAR PLANTS

AGRANA maintains two production sites in Austria, in Tulln and Leopoldsdorf, as well as a further seven production sites in five Central and Eastern European countries. AGRANA also operates a packaging and distribution centre in Bulgaria.

AUSTRIA Each site in Austria processes around 12,000 tonnes of sugar beet per day. The sugar refinery in TULLN was opened in 1937. The site in Tulln is nowadays home to the administration department of AGRANA Zucker GmbH as well as the central sugar storage facility in which all of the products obtainable under the Wiener Zucker brand in Austria are manufactured, packaged and fully automatically stored in and shipped from a high-bay warehouse with a capacity of around 8,000 tonnes of sugar. Europe's second largest sugar silo, with a storage capacity of around 70,000 tonnes, was commissioned in Tulln in 2011.

The sugar refinery in LEOPOLDSDORF, built in 1901|1902, was originally intended for processing raw sugar. It was converted to a white sugar refinery in 1925. The Leopoldsdorf facility mainly ships sugar in bulk or packaged quantities (big bags or 50 kg bags) to the food processing industry.

HUNGARY The AGRANA subsidiary Magyar Cukor Zrt. operates Hungary's largest sugar refinery, located in KAPOSVÁR. The processing capacity amounts to 7,000 tonnes of sugar beet per day. In order to adequately supply the Hungarian market, raw sugar is also refined in Kaposvár to make white sugar. Kaposvár is home to one of the largest biogas plants in Europe, one which is able to cover approximately 70% of the primary energy requirements of the plant. Following the installation of a biogas treatment plant and the feeding of the gas into the natural gas network in the 2015|16 financial year, this facility will in future be largely independent of primary energy sources. AGRANA is a leading player in the Hungarian food sector with the Koronás Cukor brand.

CZECH REPUBLIC Moravskoslezské cukrovary a.s., AGRANA's subsidiary in the Czech Republic, refines at

total of 9,400 tonnes of sugar beet per day at its facilities in HRUŠOVANY and OPAVA, sugar which is subsequently distributed under the brand name »Korunní Cukr«. AGRANA has developed to become a key market player in this country.

SLOVAKIA During the most recent campaign, the sugar factory of AGRANA's Slovakian subsidiary, Slovenské cukrovary, s.r.o., in SERED', processed around 4,800 tonnes of sugar beet per day to make sugar which is sold on the Slovakian market under the »Korunný Cukor« brand.

ROMANIA S.C. AGRANA Romania S.A. operates two sugar factories in Romania which mainly refine raw sugar. The raw cane sugar grown in emerging markets such as Brazil and Thailand is shipped to Romania and processed to make white sugar at the AGRANA facilities. In addition to refining raw sugar, the factory in ROMAN also processes up to 5,400 tonnes of sugar beet per day. The factory in BUZĂU operates exclusively as a raw sugar refinery. The white sugar manufactured by AGRANA under the Mărgăritar Zahăr brand is sold in the Romanian retail market.

BOSNIA-HERZEGOVINA The STUDEN-AGRANA raw sugar refinery in BRČKO is a joint venture in which AGRANA and its long-standing distribution partner in the West Balkan region, Studen & Co Holding GmbH, both hold 50% stakes. This plant has a processing capacity of around 650 tonnes of raw sugar per day. The sugar produced by STUDEN-AGRANA is marketed throughout the entire West Balkan region and Slovenia under the AGRAGOLD brand.

Focus on sustainability

A large proportion of the 1,100 kWh of energy required to produce a tonne of sugar comes **FROM NATURAL GAS**

ISO 50001

ENERGY MANAGEMENT SYSTEMS certified according to ISO 50001 are in place at all sugar facilities.

REDUCTION OF AROUND 60% in terms of energy use and a significant cut in harmful air pollutants as a result of low-energy drying facilities in Austria

OUR EUROPEAN MARKET PRESENCE

SUSTAINABLE

SUGAR REFINING

Besides producing sugar from sugar beet, AGRANA also refines raw sugar from sugar cane to make white sugar at its plants in Romania and Hungary. The plant in Bosnia-Herzegovina is operated purely as a raw sugar refinery.

In order to supply its raw sugar refineries in the EU, AGRANA sources raw sugar from the so-called least developed countries[1], with the facility in Brčko|Bosnia-Herzegovina being supplied with raw sugar from the global market, mainly from Brazil. AGRANA has been a member of Bonsucro since July 2014 in order to ensure that a sustainable upstream supply chain also exists for the raw sugar it sources. Bonsucro is a non-profit organisation which aims to improve the social and environmental criteria in the value-added chain for sugar produced from sugar cane. This membership allows AGRANA to source raw sugar made from sugar cane which has been certified as sustainable by Bonsucro.

In order to be able to offer its customers, as the first such EU provider, a so-called Bonsucro chain of custody, all of the AGRANA refinery sites were audited and successfully completed a Bonsucro group certification process in December 2014. The chain of custody certificate allows AGRANA customers to use the Bonsucro logo on their products.

BONSUCRO CHAIN-OF-CUSTODY-CERTIFIED RAW SUGAR REFINING

BON SUCRO
The global sugarcane platform

1 The term least developed country (LDC) defined by the United Nations applies to a group of 48 countries around the world with a particularly low socio-economic status.

FAIRTRADE

The cane sugar available in the Austrian retail sector under the Wiener Zucker brand has been certified under the **FAIR TRADE** *scheme.*

SUGAR AND RELATED ANIMAL FEED & FERTILISER PRODUCTS

In the interests of sustainability, it is particularly important for AGRANA that the agricultural commodities consumed are utilised as fully as possible. The sugar refining process gives rise to several valuable co-products which are used as conventional or organic animal feed or fertilisers.

BEET FRAGMENTS and minimal quantities of foliage are removed by the beet cutting machine. Beet fragments are primarily used in the production of biogas.

CARBONATED LIME is produced in the course of the liquor cleaning process and is a particularly fast-acting lime-based fertiliser. Carbonated lime is rich in phosphorus and nitrogen and is also usable in organic farming methods.

SUGAR BEET COSSETTE PELLETS are dried ad pelleted sugar beet cossettes. Adding molasses increases the energy content due to the associated sugar. Sugar beet cossette pellets are an important component in the production of concentrated animal feeds as well as being popular as a straight animal feed. Sugar beet cossettes enriched with molasses stimulate livestock's appetite, are rich in raw fibre and enhance the wellbeing of ruminants.

MOLASSES around 10 to 15% of the sugar cannot be extracted by means of crystallisation. This proportion of the sugar largely remains in the molasses and also, to a lesser extent, in the cossettes. The remainder largely remains in the molasses and also, to a lesser extent, in the cossettes. This appetising animal feed is an excellent source of energy and can also be used as a supplementary feedstuff.

BLACKSTRAP MOLASSES represents with a sugar content of up to 18 % the low-sugar constituent of molasses and is obtained during the extraction of sugar. Blackstrap molasses is rich in potassium oxide and nitrogen and is mainly used in agriculture as a fertiliser.

ACTIBEET® is a natural source of betaine obtained from partially desugarized (sugar) beet molasses from Austrian sugar beets. Betaine is naturally found in marine creatures and in plants, particularly in sugar beets. It acts as a non-ionic osmoprotector (cell protection in critical situations – heat stress) and as a methyl group donor (sustaining important physiological functions, e.g. liver protection; sparing of added choline and partially methionine). Thus Betaine gains on its importance in the field of animal nutrition.

Many of our animal feed and fertilisers are also certified for use in organic farming.

Focus on sustainability

CHROMATOGRAPHIC PROCESSES to physically remove sugar from molasses replace other processes associated with high volumes of waste water

WASTE WATER TREATMENT plants at all sites ensure that the waste water generated is treated in an environmentally sensitive manner

HOP EXTRACTS and resins are used to disinfect the extraction plants instead of processing aids

SUGAR BEET have been **GROWN** in Austria since the 19th Century.

SUGAR

FACTS & FICTION

SUGAR: A PURE, NATURAL PRODUCT

Sugar is produced from sugar beet without the addition of any additives and is therefore a carbohydrate in its purest form. Carbohydrates are particularly important in our lives due to the fact that they are our body's preferred source of energy. A balanced diet should rely on 50 to 55% of energy from carbohydrates, with a further 10 to 15% obtained from proteins and between 30 and 35% from fats.

THERE ARE SUGARS AND SUGARS

The beet sugar produced at the AGRANA sites consists of nearly 100% pure sucrose. Sucrose is a disaccharide which is formed from the chemical building blocks of fructose and glucose. All forms of sugar, also including maltose and lactose besides sucrose, are converted by our bodies into glucose, which is a valuable source of energy. Sugar is therefore a valuable source of energy and new strength which organisms need, particularly after physical exercise.

SUGAR AND CARIES

It is not sugar but a lack of oral hygiene which is responsible for tooth decay (caries)! All carbohydrates, regardless of whether from apples, bread or rice, encourage the formation of acid in the mouth. The type of carbohydrates plays a less important role in the formation of caries than the frequency carbohydrates are consumed and how long these carbohydrates are in contact with the teeth. If you clean your teeth regularly (that means at least twice a day) with toothpaste containing fluoride, you can avoid tooth problems.

IS BROWN SUGAR HEALTHIER THAN WHITE SUGAR?

Brown sugar may look healthier and more natural than white sugar, but this is not the case from a health perspective. Brown sugar is essentially white sugar to which syrup residues are still attached. While white sugar is crystallised several times and purified with water, brown sugar from sugar beet gets its colour from and its distinctive taste through the addition of raw sugar syrup and caramelised crystallised sugar. Brown cane sugar, on the other hand, is only partially refined, as a result of which it retains its brown colour and the typical taste of cane sugar.

SUGAR COMPARED WITH HONEY

The case with honey is similar. Honey largely consists of various sugars, such as fructose and glucose, as well as minerals and traces of vitamins. These minerals are inadequate to meet our mineral requirements and, vis-a-vis other forms of sugar, do not provide any notable nutritional advantages.

SUGAR – A CAUSE OF OBESITY?

Sugar has no particular characteristics which justify labelling it as a primary cause of obesity. On the contrary: The conversion of carbohydrates, and therefore also sugar, into body fat is a process which requires more energy than the conversion of fats from food into body fat. The only people who become fat are those who eat too much as a whole and who take too little exercise. One gram of sugar has the same number of calories as one gram of protein, i. e. 4 kcal, and therefore less than half that of one gram of fat (9 kcal). A sugar cube, for example, doesn't have more than 15 kcal (63 kJ).

SUGAR AND NUTRIENTS

Due to its high degree of purity, nearly 100% sucrose, sugar is often referred to as a source of 'empty calories' and a vitamin depletory. The concern that sugar consumption will reduce the uptake of nutrients such as vitamins and minerals is unfounded. Sugar rarely or never is consumed in isolation but always as a sweetening agent with different foods. With its sweet taste, sugar also often contributes to nutrient-rich products with an unattractive taste becoming more accepted by consumers. The accusation of vitamin depletion is not justified. Vitamin B1 in our metabolism ensures that sugar is utilised. However, this also applies to other carbohydrates, i. e. from bread, potatoes and noodles. Our body sources vitamin B1 from a mixed diet. One more reason to ensure a balanced and moderate diet with carbohydrates, fats and protein as well as vitamins and minerals.

Did you know that **SUGAR CAN BE KEPT FOR AN ALMOST INDEFINITE PERIOD** *if stored appropriately? Exceptions apply to several special sugar varieties such as gelling sugar which also contains other ingredients besides sugar.*

Details about the entire **WIENER ZUCKER PRODUCT RANGE** *can be found on the following pages.*

OUR

SUGAR PRODUCTS

The sugar produced in AGRANA's sugar refineries is sold to consumers under country-specific brands. Both attractive packaging designs and consistently high quality levels are the keys to the success of our sugar brands. With so many different varieties, consumers are simply spoilt for choice.

SUGAR AND ITS MANY FORMS

Presses are used to create the various sugar cube varieties and the so-called 'Zuckerhut'. Grinding is used to make icing, powder and baking sugar. Caster sugar is particularly fine icing sugar which doesn't form lumps and doesn't melt even on warm pastries and cakes. Besides sugar, gelling sugar also contains pectin, as a gelling aid, and citric acid. White and brown rock sugar is made from a top quality sugar solution by means of a slow crystallisation process. In response to numerous customer requests, our range of organic products has been extended this year. In addition to our organic crystallised and organic 2:1 gelling sugars, an organic icing sugar has also been launched. The product range is rounded off by our cane sugar varieties such as crystallised brown cane sugar, brown sugar cubes and our brown sugar sachets; all products which are manufactured for AGRANA in accordance with Fairtrade standards. A wide range of special sugar varieties is produced for the food processing industry.

ORGANIC SUGAR

SYRUP SUGAR

POWDER SUGAR

SUGAR FOR INDUSTRIAL PROCESSING

- Pastries
- Confectionery
- Dairy products
- Preserves
- Fruit processing
- Drinks

ORGANIC SUGAR
FOR INDUSTRY AND END CONSUMERS

- Organic crystallised sugar
- Organic gelling sugar
- Organic icing sugar

FOR END CONSUMERS

- Sugar cubes in different shapes and sizes
- Crystallised and Fine crystallised sugar
- Powder, Icing and Baking sugar
- Caster sugar ans Sugar crystals
- Gelling and Syrup sugar
- White and brown rock candy
- Fructose and Glucose
- Brown sugar
- Yellow sugar
- Cane sugar („Fair Trade"-certified)

GELLING SUGAR

YELLOW SUGAR

CANE SUGAR

THE

HISTORY OF SUGAR

6000 B. C.

SUGAR CANE
spread from East Asia to India and Persia.

1493

CHRISTOPHER COLUMBUS
On his second voyage of discovery, Christopher Columbus planted sugar cane on Hispaniola (the Dominican Republic and Haiti).

1810

SUGAR BEET
The first state-supported attempt at producing sugar from beets was undertaken 1810.

1843

SUGAR CUBES
In 1843, the first sugar cubes were introduced to the market, invented by sugar plant director Jakob Christoph Rad based on a suggestion made by his wife.

1850

INDUSTRY
Since around 1850, sugar has been produced industrially and the production processes continuously improved.

1988

AGRANA
Founding of AGRANA Beteiligungs-AG Since 1988 - the development of a wide range of top quality sugar varieties, all closely aligned to various applications and users.

Today

CULTUR
Our brand, Wiener Zucker, is now a part of the Austrian pastries culture and therefore an intrinsic part of the sweet side of life in Austria. With its numerous sugar varieties, AGRANA offers a degree of product diversity which is unique - worldwide.

THE

SWEET SIDE OF AUSTRIA

The sugar produced from Austrian sugar beets is top in terms of its purity due to its consisting almost entirely of sucrose as a result of the controlled farming methods used and the continuously quality tests it is subjected to. The Wiener Zucker brand has long been synonymous with top quality and therefore is fi rmly trusted by Austrian consumers. The unparalleled range of Wiener Zucker varieties is inextricably linked to the sugar culture of Austria and its tradition of cakes and pastry delicacies: Whether 'Sachertorte', pancakes, semolina or 'Salzburger Nockerl' – one ingredient makes all of these famous desserts unmistakeable: Wiener Zucker!

ORGANIC ICING SUGAR:

Organic icing sugar is extremely finely ground and sieved organic crystallised sugar. It symbolises organic growing methods and sustainable farming. Its processing is subject to strict monitoring. Ideal for cakes, pastries, baking, fillings and icing.

GELLING SUGAR - SECOND SEASON WITH OUR NEW FORMULATION

For making jams, preserves and jellies. The natural jellying process is supported by pectin when used in the right concentration with citric acid and crystallised sugar. In response to numerous requests from consumers, we have removed palm butter from the list of ingredients in the Wiener Zucker range of gelling sugars. This relates to the 1:1, 2:1 and 3:1 varieties. The organic 2:1 gelling sugar had previously been manufactured without the use of palm butter.

AGRANA

SITE TOURS

Have you ever wanted to know how the sparkling crystals in your sugar are produced or how our extremely finely ground icing sugar is packaged?

Discover the secrets of Wiener Zucker on a site tour at our sugar refinery in Tulln, Lower Austria, during which you will accompany our Austrian sugar beet on an exciting journey along the production chain at our facility.

The tours last around one hour and will be taking place at 10:30 and 13:00 on Tuesdays and Thursdays in the period between 4 October and 13 December 2016. Reservations are necessary and can be made using our online registration form at visitors.agrana.at.

More details and the registration form can be found on the following pages.

AGRANA

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This image brochure is available in both German and English.

WWW.AGRANA.COM