



FROM BEET TO  
SUGAR 2021

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# AGRANA AT A GLANCE



*World market leader in the production of fruit preparations*



*Major manufacturer of customer-specific starch products and bioethanol in Europe*



*Leading sugar supplier in Central, Eastern & South-Eastern Europe*

Fruit, starch and sugar - 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 and Eastern Europe. AGRANA is as well the global leader in the production of fruit preparations and the leading producer of fruit juice concentrates in Europe and a major manufacturer of customer-specific starch products and bioethanol in Europe. Our products can be found not only in food, but also in textiles, cosmetic products and technical applications such as adhesives and paper.



## OUR EMPLOYEES ARE OUR MOST IMPORTANT RESOURCE.

AGRANA maintains a global presence with around 9,000 employees based at 55 production facilities located on five continents. Their dedication and expertise ensure the company's success.

## AGRANA IS A STOCK CORPORATION.

AGRANA has been quoted on the Vienna Stock Exchange since 1991, in the Prime Market Segment since 2002. 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.



**FOCUS ON  
SUSTAINABILITY**

**%**

*PROCESS ALMOST 100%  
of the agricultural  
raw materials used*



*Respect for all  
STAKEHOLDERS*



*Cooperation in the  
form of LONG-TERM  
PARTNERSHIPS*

# SUSTAINABLE BUSINESS

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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. In our 2020|21 financial year, AGRANA's Sugar segment processed 4.8 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 Platform (SAI Platform) since 2014. This platform presents best practices as well as e.g. allowing producers the option of performing self-assessments and it 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.

AGRANA has been producing liquid betaine at the Tulln sugar factory since 2015. Since 2020, a plant to chromatographically enrich and crystallise molasses, to produce valuable amino acid-like betaine for the use in the cosmetics and special feed sectors, is in operation. As part of a joint venture with the American sugar producer The Amalgamated Sugar Company, AGRANA invested around EUR 40 million in this project. The new plant, which has an annual production capacity of around 8,500 tonnes of crystalline betaine, is the third production site in the world to produce natural, high-quality crystalline betaine.

*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 and at [wsk.agrana.com/en](https://wsk.agrana.com/en)*



# SUGAR BEET GROWING

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**Growing sugar beet enjoys a long tradition in Europe and is constantly developing.**

In 2020, about 5,600 beet farmers and contract partners in the Central and Eastern European countries harvested sugar beet for AGRANA on about 76,300 hectares. 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.

This is what the "AGRANA4you - Success through partnership" program stands for. This partnership is not only based on the fact that AGRANA purchases and processes the products produced by the farmers, it also consists in offering the raw material producers a very special service package with "AGRANA4you". The AGRANA area supervisors, as direct links between the farmer and AGRANA, play a central role. In addition to individual and free advice on support in agricultural practice, the farmer is also offered numerous services, such as attractive combi contracts, fertilizer and feed at favorable conditions, field days and machine demonstrations as well as an in-house research and development department. Based on the research results of the AGRANA Research & Innovation Center (ARIC), the latest findings are implemented directly into practice to help contract farmers optimise beet growing. The aim is to increase the sugar yield per hectare and at the same time to support sustainability measures through resource-saving use of operating inputs for farmers, the environment and society.

Farmers can also visit one of the 50 test sites 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.

**AGRANA** 4you





1ha



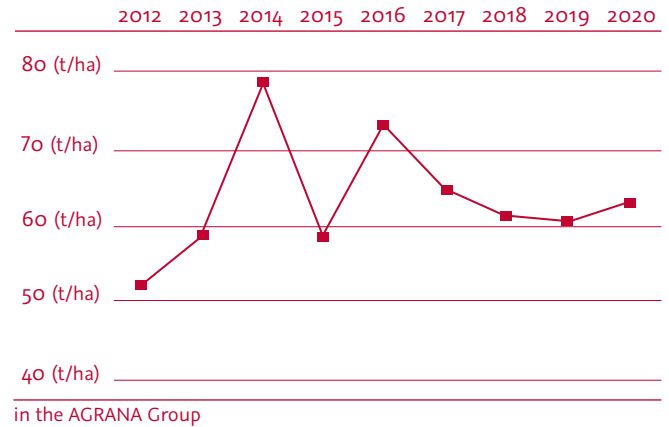
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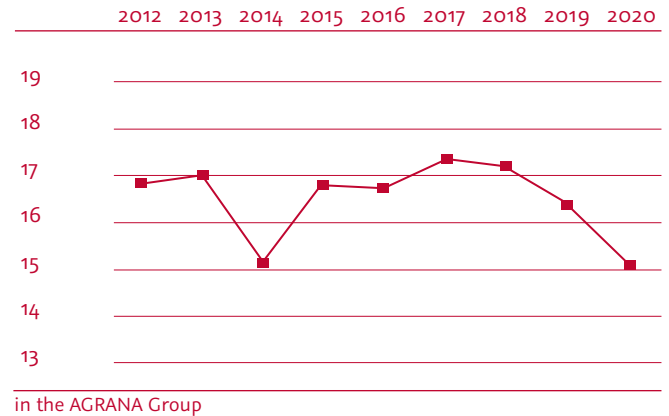
Around 90,000 sugar beet are harvested from a GROWING AREA of one hectare.

With the aid of the Electro-Ultrafiltration (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.

### AVERAGE SUGAR BEET YIELDS



### SUGAR CONTENT IN % POL (POLARISATION)





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](https://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 110,000 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 middle 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 trips with the farmers in order to jointly identify carefully selected plant management methods.





MAY



JUNE



JULY



AUGUST

**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](http://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 end 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 0.8 and 1.1 kilogrammes and consists mainly of water and around 18% sugar. An average of 70 to 100 tonnes of sugar beet or up to 14 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 again in the sense of a closed loop management.



*AGRANA organises annual field days on various key topics, such as hoeing technology or soil cultivation, to present the latest technical developments to its beet farmers and provide a platform for professional exchange.*



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.

12,500 tonnes      240 railway waggons





*Around 12,500 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.*



*To protect the environment, in Austria and in Hungary around 50% of sugar beet are transported by rail.*

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 15 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 the plant nutrients absorbed from 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:  
15-20%

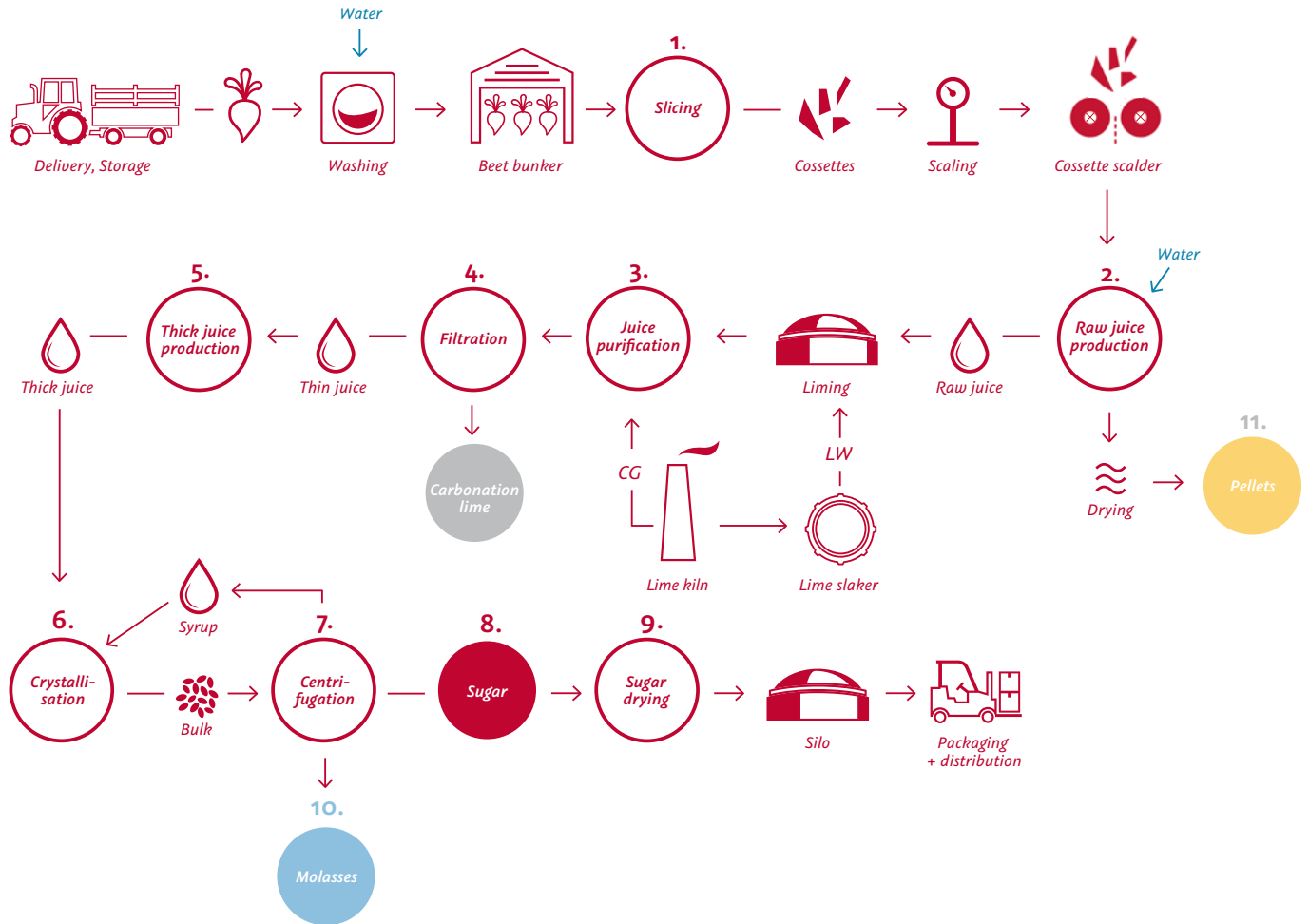


Beets length:  
20-30 cm



Weight approx.:  
0.8-1.1 kg

# STAGES OF SUGAR PRODUCTION



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:** Part of the non-sugars in the raw juice are bound and extracted by means of the natural substances lime (CaO) and carbonic acid gas (CO<sub>2</sub>) 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 separated 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, animal feed industry and betaine production 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.



*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.*



*Depending on the quantity of beet harvested, the SUGAR BEET PROCESSING CAMPAIGN lasts an average of around 120 days. Around 800 personnel are employed at the Austrian sugar plants during this period.*



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



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



*REDUCTION OF AROUND 70% in terms of energy use and a significant cut in harmful airborne emissions during the cossette drying process due to low-temperature drying facilities in Austria.*

# OUR SUGAR PLANTS

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**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 administrative department of AGRANA Zucker division 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 capacity of around 70,000 tonnes, is located in Tulln. In Tulln, a molasses desugarization plant, in which the protein-rich fraction betaine is extracted from the molasses, is since mid-2020, in operation. Since 2020, this liquid betaine is further purified by crystallization.

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. In Kaposvár, there is also one of the largest biogas plants in Europe. This plant is able to provide up to 80% of the primary energy needs of the sugar factory by means of biogas produced on site during the sugar beet campaign. AGRANA is a leading player in the Hungarian food sector with the Koronás Cukor brand.

**CZECH REPUBLIC:** Moravskoslezské cukrovarý a.s., AGRANA's subsidiary in the Czech Republic, refines at total of 9,600 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 cukrovarý, s.r.o., in **SERED'**, processed around 5,000 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 5,600 tonnes of sugar beet per day during the sugar beet campaign. 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.

**BOSNIEN-HERZEGOWINA:** 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 up to 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.

# OUR EUROPEAN MARKET PRESENCE



- AGRANA sugar plants
- INSTANTINA Nahrungsmittel Entwicklungs- und Produktions-Ges.m.b.H.
- Packaging- and distribution centre



# SUGAR REFINING

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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<sup>1</sup> and via the global market, with the facility in Brčko|Bosnia-Herzegovina being supplied with raw sugar from the global market, mainly from Brazil.

# ORGANIC SUGAR

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## ORGANIC SUGAR BEET

Grown on local land, the quality of these sugar beets is based on many years of experience and the outstanding levels of care taken by our farmers. Organic white beet sugar from Wiener Zucker is ecologically sound, grown using sustainable methods, offers outstanding taste and is subject to a system of strict quality controls extending from planting through to the finished product.

## GMO-FREE THROUGH OWN SEEDS

AGRANA works together with beet farmers and Rübensamenzucht GmbH to ensure the unadulterated development of the genetic material through its own beet seed propagation and beet seed processing at the Tulln site. The quality label "Ohne Gentechnik hergestellt" certifies to the traditional Wiener Zucker brand that freedom from genetic engineering is guaranteed along the entire value chain.

<sup>1</sup> 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.*

# ANIMAL FEED & FERTILISER PRODUCTS

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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, acts quickly as a lime fertiliser and contains other important plant nutrients such as phosphorus and nitrogen. Carbokalk is also usable in organic farming methods.

**SUGAR BEET COSSETTE PELLETS** are dried and 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 palatable animal feed, with a sugar content of at least 42 %, is perfectly suited for rapid energy intake and can be used as a feed supplement.



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

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**BLACKSTRAP MOLASSES** is the result of another production step - chromatographic sugar separation - and has a sugar content of around 18 %. Being rich in potassium oxide and nitrogen, blackstrap molasses is mainly used as an agricultural fertiliser. Our blackstrap molasses is also certified for use in organic farming.

**BIOVITABEE®** is a premium quality bee food. The partially inverted sugar syrup is made from GMO-free organic sugar beet (according to Organic Regulation (EC) No 834/2007). This feed product is microbiologically stable and has a long shelf-life meaning, as a result, that it is easier to store and extending the period during which the feed is usable.

## *BETAINE PRODUCTS*

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Natural betaine is multifunctional. The plant-based, GMO-free ingredient functions as methyl group donor and it has osmoregulatory properties. Natural betaine is a multifunctional ingredient for several application areas.

Generating natural betaine from sugar beets is an exciting procedure, pre-supported by the sugar production and the molasses desugarization. Liquid betaine, a side product of the sugar production functions as raw material in the crystallization process. Natural crystalline betaine is extracted using filtration, separation and crystallization methods. For food and personal care purposes the product is subjected to additional polishing processes.

AGRANA sells crystalline natural betaine for the feed sector under the brand name **ActiBeet®**. In the plant care sector **BetaSol®** stands for natural betaine. **DuraBeet®** and **PuraBeet®** are registered brand names for food and personal care applications.



*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*

# SUGAR FACTS & FICTION

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## 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.

## SUGAR - VALUABLE ENERGY

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. Due to its high degree of purity, nearly 100% sucrose, sugar is often referred to as a source of 'empty calories' and a vitamin robber. 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. 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.

## 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 BEET have been GROWN in Austria since the 19<sup>th</sup> century.*



*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.*

#### HONEY - BETTER THAN SUGAR?

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 DRUG?

Sugar is neither an addictive substance as it has no mind-altering effect nor does it fulfil the criteria for addiction issued by the WHO (ICD- 10, International Statistical Classification of Diseases and Related Health Problems) such as compulsive consumption, loss of control, development of tolerance, mental and physical dependence.

#### SUGAR - AS VITAMIN ROBBER?

The accusation of vitamin robber 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.

#### 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. Several studies have also shown that the replacement of sugar by other nutrients whilst keeping the same calorie level does not lead to a change in body weight. 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).



**100% NATURAL PRODUCT**  
*Sugar is extracted from sugar beet and does not contain any additives*



**SUGAR IS A CARBOHYDRATE**  
*Carbohydrates are particularly important because they are our body's preferred source of energy.*



**1 GRAM of sugar contains only 4 KCAL.**  
*A sugar cube doesn't have more than 15 kcal (63 kJ).*

## SUGAR - CAUSES 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.

## DOES SUGAR MAKE PEOPLE ILL?

Morbid obesity (obesity) and the resulting so-called non-communicable diseases (diabetes, cardiovascular diseases) can be caused by numerous factors. In addition to a less active lifestyle or genetic disposition, a permanently positive energy balance, so higher energy intake with low energy consumption, is certainly jointly responsible. It is clear, however, that in a balanced diet, neither sugar makes you sick, nor does protein or fat.

Even those who like to eat sweet food often, do not automatically develop diabetics. Diabetes, more specifically type 2 diabetes, is one of the most common lifestyle diseases of our times. People who are overweight and do little exercise have a significantly higher risk of developing this form of diabetes.

According to the Austrian Diabetes Association<sup>1</sup>, the most effective means of preventing type 2 diabetes is a change in diet and physical activity. Diabetics can source between 45 and 60% of their entire energy requirements in the form of carbohydrates. Preference should be given to vegetables, wholemeal products, pulses and fruit.

The strict avoidance of sugar is no longer recommended. However, sugar should not make up more than 10% of total energy consumed. This is in line with the current WHO guideline (recommendation: 50g, restricted recommendation: 25g)<sup>2</sup>

<sup>1</sup> Diabetes Mellitus, Practical Guidelines 2016

<sup>2</sup> World Health Organization (2015): Sugar intake for adults and children



Saying I

*L* **OVE**

you.

Without any words.

    /wienerzucker

The best recipes for each sugar:  
wienerzucker.at



A BRAND OF AGRANA

# 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 last 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, organic coconut blossom sugar 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.

### 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
- > Sugar tin
- > Caster sugar and Sugar crystals
- > Gelling and Syrup sugar
- > White and brown rock candy
- > Brown sugar
- > Yellow sugar
- > Cane sugar („Fair Trade“-certified)



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





Organic Icing  
sugar



Syrup  
sugar



Powder  
sugar



Gelling  
sugar



Yellow  
sugar



Organic  
crystallised sugar

# THE HISTORY OF SUGAR



6000 v. CHR.

*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 intro-  
duced 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

**CULTURE**  
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 firmly 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 unmistakable: Wiener Zucker!





*Did you know that the  
WIENER ZUCKER brand  
has existed since 1994?*



**BRAND COMMUNICATION IN AUSTRIA AND EASTERN EUROPE:**  
AGRANA is now taking a decisive step for its overall communicative presence for its sugarbrands in seven countries: With the brand promise "Here's what I can do." AGRANA is appearing for the first time with a transnational brand promise. A slogan that not only underlines the portfolio, but above all stands for what our products can do - this is shown with the new marketing strategy.

It is time to offer a new perspective on sugar. Sugar is not only an ingredient; sugar has the ability to transform itself and simple dishes into pure delight and special moments. This transformation is especially visible when it comes to jam, boiling down & baking. Simple dough suddenly turns into Christmas and fresh fruits become a gift for loved ones. Therefore this fascinating transition became our key theme for the new marketing campaign.

*On our website  
**WWW.WIENER-ZUCKER.AT**  
you can find many delicious  
recipes for cooking.*





WIENER  
ZUCKER



Zuckerdose  
So schön kann Genießen sein.  
Feinkristallzucker  
750g



The spontaneous  
BRAND AWARENESS level  
of Wiener Zucker is 85%.



Our slogan, which translates  
as 'THE SWEET SIDE OF  
AUSTRIA', has a prompted  
awareness level of 62%.



Wiener Zucker is most  
frequently associated with  
TRADITIONAL (86%),  
HIGH QUALITY (78%) and  
POPULAR (77%).

Source: Studie Media1 2018



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This image brochure is available in both German and English.



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Austria



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Hungary



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