

VALUE CHAIN & HARVEST

REPORT 2019

**AUSTRIA
JUICE**





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VALUE CHAIN & HARVEST

From field to press in one day

The post-harvest value chain determines the quality of the product for the customer. At AUSTRIA JUICE, a functioning supply chain has proven itself over many years.

Strawberries, redcurrants, sour cherries, carrots, apples, chokeberries, raspberries and pears - from April to December, the AUSTRIA JUICE farmers' various production areas are all about one topic: the harvest.

Two thirds of the total volume is produced in Europe - for example in Poland, Germany, Hungary and Austria - the rest is produced in China and in parts of South Africa, as well as in South and North America. The value chain follows an important rule: all 15 AUSTRIA JUICE production sites worldwide are located within easy reach of the harvesting area. The short distance with short transport routes is the basis for enabling a complete value creation chain while guaranteeing freshness and a production with a low life cycle assessment.

Harvest: Season start in April

Depending on the season, the focus of the harvest is on a different cultivation country in order to obtain a profitable value chain. The season starts in Europe in April with elderflower followed by strawberry, rhubarb and gooseberry in June; blackcurrant, sour cherry, raspberry and blackberry in July, as well as aronia, blueberry, elderberry and plum in August. In late summer, grapes, pears and apples are on the menu. The season ends with rose hips, carrots and beetroot. Apples are harvested the longest - the last fruits are taken from the trees in December.



The 3 types of fruit juices from AUSTRIA JUICE

From the fruits, three kinds of juices are pressed in the production plants, which are bought by the customers due to different advantages:

1. Direct juice/NFC

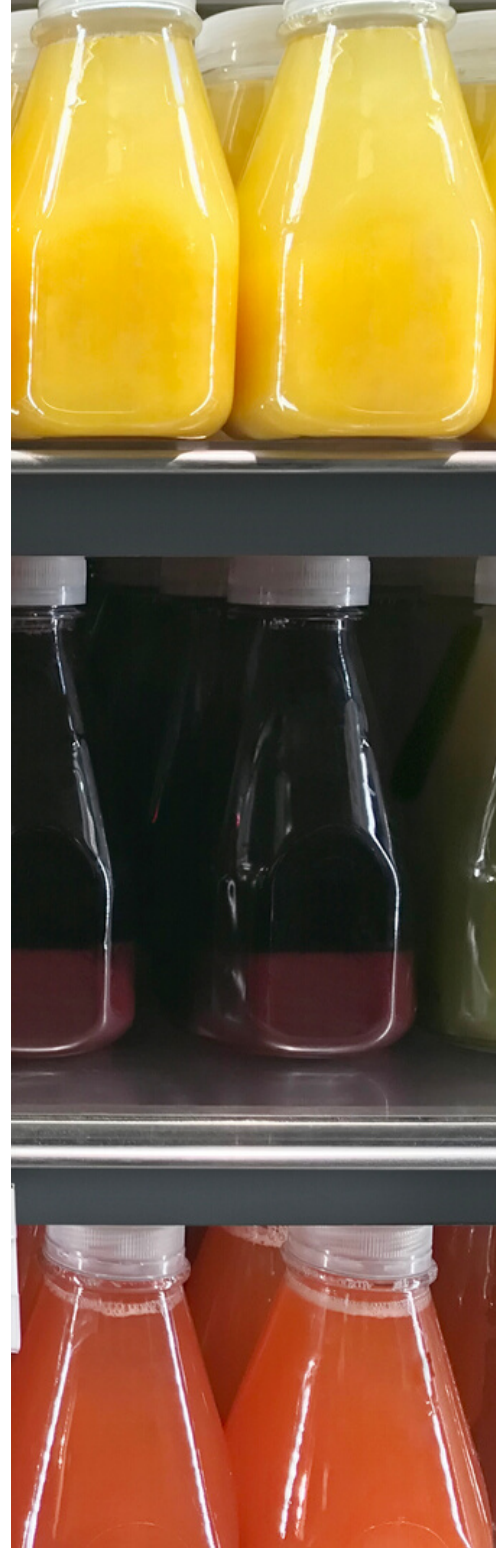
Juice is more intense and scores with a stronger mouthfeeling due to more fruit particles in the juice. It tastes the freshest and has the highest quality

2. Concentrate

During production, the fruit is deprived of water, creating a viscous concentrate similar to honey. Concentrate is made with heat. It can be easily transported and saves 15 percent of transportation and storage costs

3. Nectar

These low-fat fruit juices are made up of 30 to 40 percent fruit juice concentrate and sugars and flavours



But how is the production related to the harvest quantity?

For a liter of 100 percent apple juice 1.3 kilograms of apples are processed, for a liter of concentrate eight kilograms of apples come in the press. One liter of concentrate in turn generates seven liters of juice.

Mostly manual harvest

Most fruits are harvested by hand, such as strawberries, apples, pears and raspberries, because harvesting techniques on a machine basis are still in their infancy for these types of fruit. In the long run, there will probably be no way around using more and more machines.

"Workers are in short supply, because the strenuous work on the field, often in the heat of the day, is not particularly attractive," says Johann Amon, Director of Procurement at AUSTRIA JUICE, "In addition, people from the countryside tend to move to cities."

"Mechanical harvesting is already used for apples, but in many cases their use is not possible, as the plantations do not have enough tree spacing for the use of machines", says Johann Amon.

By shaking the trees through machines, some of the goods can be easily affected, which is less suitable for the fresh market, but the value chain and yield for juice remain unaffected.

The harvesting techniques for aronia, sour cherry, blackcurrant and carrots are quite different: machine harvesting in agriculture is already widespread here.

The strawberry cultivation has been optimized in recent years so that the plants are no longer directly attached to the ground, but in dams, which are filled with a particularly nutrient-rich moss. Micro-irrigation enables a higher yield per hectare, which optimizes the value chain. Due to the height of the dams, which reaches to the waist of a harvest helper, the fruits can be harvested faster and easier.



Value chain: Fresh and fast from the field to the factory

Freshness is a top priority in the value chain during and after the harvest - a maximum of twelve to 24 hours elapse between acceptance on the field and bottling.

Within three to four hours, the fresh goods are brought to the factory by truck, where the fruits are weighed and subjected to a quality check. If the quality is okay, the fruit will be unloaded, otherwise it will be sent back. After a further two to three hours, the pressing of the removed fruits already takes place in the value chain.

The extracted juice is stored immediately - either in barrels or frozen, which is common especially for berries to preserve their color.

CONCLUSION:

For juice, concentrate and the production of nectars, AUSTRIA JUICE sources fruits from different growing regions in Europe and China. Due to the state of technological development but also to the conservation of resources, a large part of the fruits in the value chain is harvested by hand. Between acceptance on the field and bottling, the value chain of AUSTRIA JUICE never lasts more than 24 hours.



FARMING 4.0

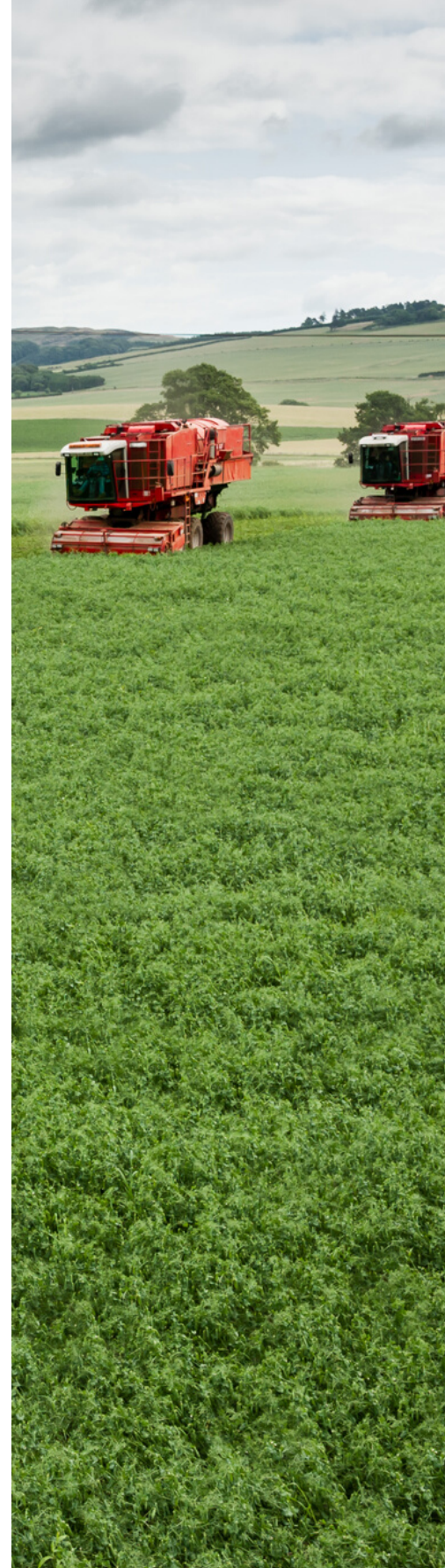
Harvest, quo vadis?

Harvesting techniques are changing: Manpower in the fields is becoming scarce and still needed, while at the same time smart technologies should make the harvest more efficient as "Farming 4.0". Which approach does AUSTRIA JUICE pursue?

Agriculture is facing a worldwide structural change: Young people are increasingly moving to the cities, because working in the field is - under increasingly extreme climatic conditions - not very attractive anymore. In addition, harvest workers are not paid very well. Harvest work is seasonal work, and so in rural areas there is often the existential question of how to earn a living for the remaining months of the year. "As a result, fewer and fewer workers are available for the harvest," says Jörg Schultz, Project Manager for Technical R&D and Processes at AUSTRIA JUICE. There seems to be a steady change where the work should be done more from machines in the future, rather than people.

Machine harvest in development

While this change may sound theoretical, the practice may sometimes be different. "For many fruits, there are still no optimal mechanical harvesting techniques," says Michael Duspiwa, who is responsible for purchasing raw materials at AUSTRIA JUICE and is constantly assessing the yield and the quality of the fruit. For example, the sour cherry as well as the apple harvest would already be using vibrating machines, but picking by hand is the gentler form, especially for the fresh market. "This technique also only works on trees that have been growing for a long time and are already stable," says Michael Duspiwa.



In case of the elderberry, for example, a vibrating technique would not work at all, as the flowers or berries hang much closer to the branches: "Elderberries are cut by hand and collected in boxes," says Michael Duspiwa.

Carrots and other vegetables that thrive in the field and in the soil, on the other hand, are easy to harvest with machines: carrots are pulled out of the soil and cut off in a similar way to a horizontal circular saw. The soil is screened off automatically by a grid.



Farming 4.0: With the drone on the field

In addition to the challenges of optimal harvesting techniques for each crop, there is a further trend in agriculture, especially in the western industrialized countries. In addition to mechanical harvesting, intelligent technologies are already normal for the supply of some large-scale farms, especially in Central European countries and Central and Eastern Europe. Depending on the type of planting and the requirements for their cultivation, in some places - especially in agriculture - fully digitized harvesters facilitate the management of large areas.

Fleets of digitized devices use modern infrastructures such as cloud computing and communicate with each other in Farming 4.0 systems - for example, to determine the processing status of individual areas and the need for input materials or to coordinate the machines. The farmer is already increasingly taking on a supervisory and controlling role in these farms.

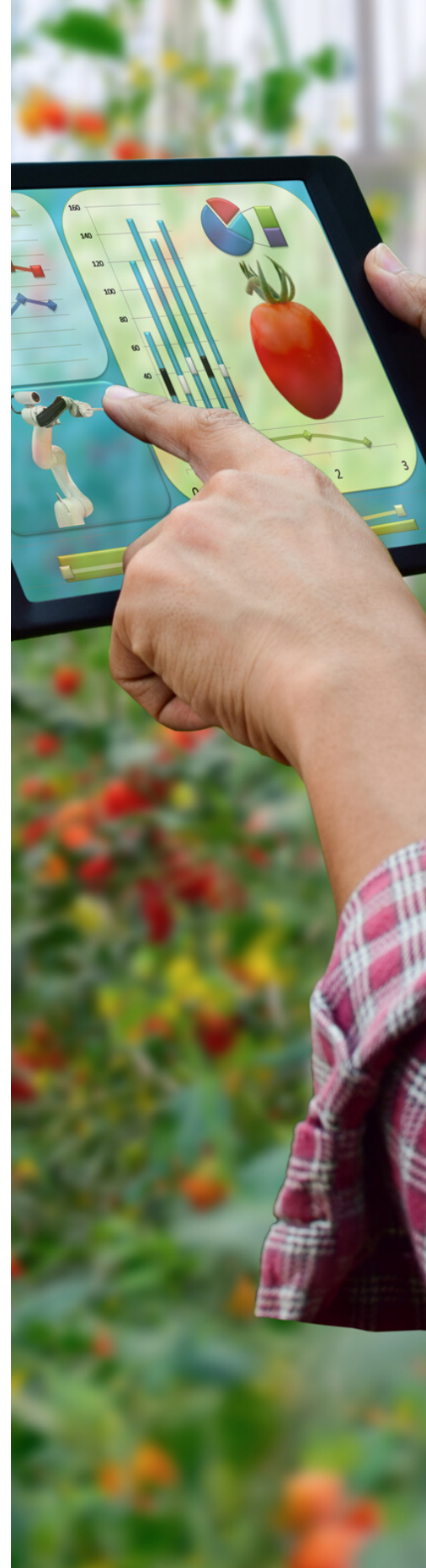
This is the extreme contrast to sustainable, resource-oriented agriculture: sensors, computers and drones optimize irrigation and nutrient balance rather than humans. Despite the high investment costs for these technologies, these are expected to increase the operational efficiency in western industrialized countries by an average of eleven percent, as a study by PwC among 100 German arable farms has shown.

Digital technologies have changed the way agriculture works and help to streamline operations and human resources.

Is Farming 4.0. really the future?

Sustainability expert Jörg Schultz sees the adaptation to this future trend as a necessity sooner or later, but advocates careful and conscious handling of this development:

"Modern technologies should not find their place in agriculture with a crowbar, if there are other possibilities available."



At AUSTRIA JUICE, the focus is on good communication with farmers and the opportunity to offer local businesses in the long-term and attractive economic prospects by contracting.

By 2030, AUSTRIA JUICE wants to confirm that 100 percent of its products are certified as "sustainable". This also means strengthening the human resource locally.

CONCLUSION:

Farming 4.0 increasingly enters crops and fields due to labor shortages and the ever-increasing amounts of agricultural food needed. AUSTRIA JUICE is in favor of dealing with this development with care: wherever human energy can still be used in an appropriate way, it has a clear advantage. The contract farming projects of AUSTRIA JUICE contribute to the sustainable development of agriculture.



SUSTAINABLE HARVEST

sensibly and conciously

AUSTRIA JUICE has set itself the goal of harvesting 100 percent of the entire goods from sustainable production by 2030.

As a member of the Sustainable Juice Covenant (IDH), AUSTRIA JUICE is part of a consortium of several large companies in the beverage industry, who want to achieve a common goal by 2030: to produce 100 percent of the goods in a sustainable manner.

The focus is on the entire supply chain, which is checked and guaranteed based on individual sustainability certifications of the respective companies. Common rules are the basis for making this goal transparent and measurable for all. Compliance with these rules is controlled by means of a uniform social audit. AUSTRIA JUICE primarily uses the Sedex SMETA audit, and the Farm Sustainability Assessment (FSA) as the basis for assessing suppliers.

What do we understand by sustainable cultivation and harvest?

Central themes in cultivation and harvesting are irrigation systems, the selection of suitable varieties for less pesticides and to suit the respective soil conditions, organic nutrient supply and the fair and trustful cooperation with the producers, which creates win-win situations and enables farmers to have a good life in the long term.



Sustainable agriculture is evident, among others, in the following areas:

- **Operational Management**
- **Working conditions**
- **Soil and nutrient management**
- **Plant protection**

In irrigation, measures that are relatively easy to implement, such as choosing the timing and the system of irrigation correctly, have a big impact.

"In the morning it is the coolest, therefore the drops get directly to the roots, where they are needed, instead of evaporating in the warm air," says sustainability expert Jörg Schultz of AUSTRIA JUICE.

Contract cultivation: AUSTRIA JUICE supports farmers

With the current contract farming projects in Hungary and Poland, AUSTRIA JUICE has been able to help local farmers improve their economic situation and secure it in the long term. Schultz: "At that time, many farmers had given up their farms in Hungary because they had no customers and did not get on economically. In contrast, the conditions for growing apple trees are ideal in Hungary, as well as in Poland. "On the other hand, in Hungary and Poland, they succeeded together with experts, in obtaining the maximum from the fruit in an environmentally friendly way. Resistant apple varieties ensure that 60 to 80 percent fewer pesticides are used. "This saves farmers money on the one hand, and helps protect the environment, on the other," says Jörg Schultz.

Together with experts and farmers, the best apple tree species were selected for the soil on the ground and farmers were asked if they were interested in working together. The trees come from regional nurseries and were pre-financed by AUSTRIA JUICE.



Another project is being planned for the cultivation of cherries for 100 percent organic cultivation. "In the future, it will become increasingly important to adapt the choice of varieties to the development of the climate - and preferably from the very beginning," explains Jörg Schultz, "because changing over from existing varieties to new ones takes around ten years time."

"What do harvesting machines do for sustainability?"

At harvest, more or less machines will tend to be used alongside or rather than human labor. "The system seems to be changing," says Jörg Schultz, "The classic system of harvest workers will not be sustainable in the long term. Farming is no longer very attractive, so more and more people are moving to the cities, which means fewer workers." Machine rings could be one solution, says Schultz: "If you can rent harvesters from a pool as needed, this saves you investment costs and several farmers can join together according to their interests."

CONCLUSION:

By the year 2030, AUSTRIA JUICE, as a member of the Sustainable Juice Covenant (IDH), intends to reach a common goal together with several large companies in the beverage industry: to produce 100 percent of the goods in a sustainable manner. Sustainable cultivation and harvesting begin with the selection of plants and trees according to the soil, and continue with appropriate and resource-friendly irrigation through to the organic supply of nutrients. Manpower is also an important resource: AUSTRIA JUICE is committed to value and strengthen it through, among other things, contract farming projects.



HARVESTING LOCALLY & PRODUCING ORGANICLY BRINGS MORE

The call for regional food and raw materials is getting louder. Which advantages it brings to produce regionally and sustainably - and how AUSTRIA JUICE scores with regionality.

Regional products are the better ones: they save costs through short transport routes, can be delivered fresher and protect the Co2 emissions. According to surveys by Euromonitor International, the market for organic foods and beverages in developing countries grew by 36 percent between 2011 and 2016. The major trends of mindfulness and clean eating have taken the beverage industry to the next level, lifting the high demand for health and wellbeing products to an even higher level. For AUSTRIA JUICE, regionality has been a cornerstone of the value chain right from the start. Each of the 15 plants worldwide is located in close proximity to the raw material production areas and through production in various countries, AUSTRIA JUICE can supply its customers on a regional basis.

Regionality and organic as a sales argument

Sustainability is also a significant sales argument for the end consumer: According to Mintel, 53 percent of US consumers already say they prefer to use products from greener companies. Twenty-four percent of Spanish consumers consider the environmental impact of buying a product. 65 percent of respondents in the UK would try to live up to higher ethical standards than a year ago.

For a sustainable sales strategy, the global market research institute offers the following three recommendations for industry and producers:

1. Selling sustainability

Commit to sustainable production, because consumers have realized how important it is to the environment.

2. Preserve resources

Improve the environmental compatibility of juice by producing resource-friendly.

3. Clarity through certifications

Commit to certification schemes to prevent allegations of "green washing" by skeptical consumers.

The brand "Organic": trust and quality

Certification for sustainability, but also the label "Organic" are useful to strengthen transparency and trust. The Organic brand has become very well established in Europe. It is believable and consumers know what to buy with a product bearing the organic label. Accordingly, the demand for organic products is constantly increasing.

AUSTRIA JUICE: 7 out of 15 plants are certified organic

Owing to strong demand, AUSTRIA JUICE has doubled the supply of organic products in the last two years: For example, 7 of the 15 plants worldwide - just under half - are already certified organic. These plants are located in Austria, Poland, Hungary, Germany and the Ukraine. For the apple, blackcurrant, strawberry, sour cherry, aronia and elderberry varieties, the company offers a rich organic portfolio in line with market demand.



CONCLUSION:

Regionality and organic production are not only essential for the ethical responsibility of companies. Customers and consumers are increasingly calling for transparency and sustainability. AUSTRIA JUICE operates 15 plants worldwide, each of which is located near the growing areas. Seven of these plants are already certified organic.



FROM APPLE TO LEMON

Citrus fruits complete the portfolio of basic ingredients for juices and drinks - and they are part of the basic equipment of every kitchen. What flavors rock with citrus fruits now - and why the sparkling fruit has a great future right now.

Citrus smell of summer and refresh any drink with its sparkling aroma. Whether orange, blood orange, lemon, lime, grapefruit, satsuma, tangerine or yuzu - every strain of the citrus family also scores with its own touch, from sour and bitter to fruity-sweet.

Citrus fruits promote health and beauty

Citruses are also popular because of their high vitamin C content: Vitamin C not only strengthens the body's defenses, but is also considered to be an important antioxidant, which often plays a major role in anti-aging products. It is added, among other facial creams and beauty serums and also supports the body in the regular intake through the diet while slowing aging processes. So citrus fruits have the potential to make a big impact on beverages that are supposed to improve health and beauty as the main actor!

Citrus fruits have a basic effect

Although lemon juice in itself tastes sour, it has a basic effect on the body - just like the other citrus fruits. It helps to restore the balance of acid and bases in the organism. It is not for nothing that more and more health-conscious people swear by a glass of lukewarm lemon water on an empty stomach in the morning: it promotes digestion, initiates detoxification processes, strengthens the body's defenses and makes you feel fresh and lively - ideally before the first cup of coffee.



And: What would a comprehensive breakfast be without a cold glass of orange juice? Those who particularly want to support the metabolism and stimulate the burning of fat, instead also like to use the bitter-sweet grapefruit juice.

Citrus fruits are at home in bars and kitchens around the world. They refine countless dishes, give different foods their sparkling taste and are indispensable on the list of ingredients of various cocktails and other mixed drinks.

Harvest time determines the taste

Citrus fruits fascinate in their taste and their variety: Also within their individual variety groups there are numerous variants: For example, more than 400 different varieties of oranges and about 20 relevant grapefruit cultivars grow on the trees worldwide, which can be distinguished among other things by the color of their pulp.

Today, citrus fruits are grown and harvested in many parts of the world - oranges, lemons and grapefruits, for example in Spain, oranges as well in Brazil. However, oranges originate in China and the country of origin of the lemons is India.

Citrus fruits: Ripening time in winter

Lemons, oranges and Co. are cultivated in plantations and thrive best in southern slopes. These offer protection against wind and cold and make the best use of sunlight and heat. They bloom in spring and the fruits themselves are ripe after about nine months. The harvest periods for the lemons start in October and end in January, while the orange are in focus in their season between September and January and in Brazil also from January to June. For oranges, as with all other citrus fruits, the right harvest time is important as they do not mature afterwards. Oranges are mainly harvested from the trees by means of vibrating machines. The oranges are then collected in drip trays. Basically, the fruits of older trees convince with a higher quality.



Citrus fruits as an aromatic combination

Citrus fruits offer an almost infinite variety of flavor combinations in the kitchen and in the preparation of drinks. The following mixtures harmonize very well:

Blood Orange

This fits: chocolate, cinnamon, almonds, cardamom, honey, cloves, figs, ginger, other citrus fruits

Orange

It goes well with: almond, basil, pineapple, vanilla, various berries, cherry, coriander, cinnamon, coffee, chocolate, cranberry, fig, ginger, grape, hazelnut, mint, nutmeg

Grapefruit

It goes well with: caramel, vanilla, other citrus fruits, basil, black pepper, mint, rosemary, thyme, various tropical fruits

Tangerine

Chocolate, cinnamon, coffee, vanilla, star anise, cardamom, cherry, fig, ginger, nutmeg, tropical fruits

In future, continue to rely on the classic ways of using citrus fruits - and discover the new ones!.



CONCLUSION:

Citrus juices are an essential ingredient in every kitchen and every bar. They can also play a significant role in the emergence of functional and beauty drinks because of their high vitamin C content.

AUSTRIA JUICE now offers not only the classic assortment but also citrus fruits of the highest quality at market prices.

