Canned Gooseberries

Agricultural Processing Brochure

Brochure content:

South African farmers facing current economic realities are searching for new options to maintain and expand their businesses. One of the many opportunities to grow markets, turnover and profits is to add value to farm produce. Options need to be selected carefully based on sound information and knowledge of the opportunities presenting themselves.

Introduction:

Product group: Gooseberries

The gooseberry is a fruit in the group of very hardy spiny bushes of the genus Ribes Grossularia of the family: Grossulariaceae. Synonyms include Feverberry, Feabes, Carberry, Groseille, Grozet, Groser, Krusbaar, Deberries, Goosegogs, Honeyblobs and Feaberry.

Gooseberries are best adapted to areas with cool, moist summers. They are grown mainly in central and northern Europe, especially Britain. The gooseberry shrubs grow between 1 - 1,75 m high, with many branches, spreading prickles, and small, three- or five-lobed, hairy leaves. The flowers are green and hang singly or in pairs from little tufts of young leaves. The berries may be red, green, yellow, or white, hairy or smooth and are eaten fresh or in preserves. The berries are oval in shape with a tart taste.

The yellow gooseberries have the richest flavour for dessert. The red berries are generally more acidic. The fruit is used for tarts, pies, sauces, chutneys, jams, and desserts, and for preserving in bottles. Good quality gooseberry wine very closely resembles champagne.

Product description: Canned Gooseberries

Canned gooseberries are prepared from fresh berries, harvested at full size but prior to softening and colour development. The berries may be water packed for Danish and fruit fillings or sugar packed for dessert fruit.

Process description:

Harvesting of Gooseberries

Gooseberries are mainly harvested by hand, but mechanical harvesters have

"Canned Gooseberries are prepared from fresh berries and must comply with the specifications".

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been developed. Hand picking is more selective but very labour intensive. The hand-picked berries are placed in sling bags and emptied into large sacks or palletised containers for transport to the processing site. The berries should be handled with great care at all times to prevent bruising, crushing and spoilage.

Trimming and snipping of gooseberries

Mechanically harvested berries often contain excessive amounts of plant material and other impurities. This should be removed in the field or before delivery to the processing plant.

The freshly harvested gooseberries are therefore trimmed to remove any remaining plant material. This can be done by hand or by passing the gooseberries through a mechanical snipper. Other impurities can be removed on vibrating screens or by aspiration,

Sorting of gooseberries

This is done to select the best suitable raw materials for manufacturing the value-added end product. The snipped gooseberries are spread on sorting tables for inspection. All damaged, infested, over mature and green berries are removed.

Washing of gooseberries

The berries are washed in agitated or non-agitated water baths filled with potable water. Agitation is caused by recirculation of the water. The water must be changed regularly to minimise the chance of any contamination spreading. Washing has the additional benefit of cooling the berries down.

Filling and exhausting of cans with gooseberries

Exhausting involves the partial or complete removal of the remaining air or oxygen in the headspace of a can to prevent corrosion of the tinplate and spoilage of the product.

The gooseberries are packed into suitable tin cans. Hot potable water or sugar syrup (at 88 - 96 °C) is added. The filled containers are exhausted with steam at 100 °C for 5 - 6 minutes. The steam reduces the oxygen in the headspace that may cause some undesirable changes in the product (discoloration).

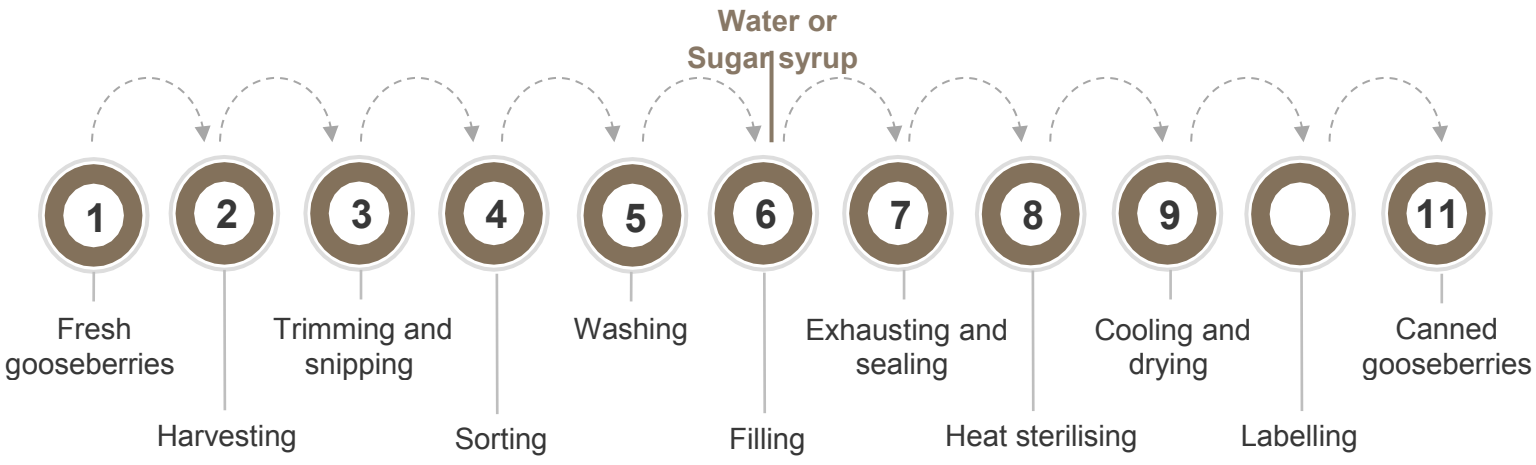
The containers are sealed under steam injection. Upon cooling, the steam forms a partial vacuum in the headspace. If the exhaust is insufficient, the berries will collapse during sterilisation, releasing the air within them with the result that the vacuum is not maintained and the product could spoil.

Sterilisation of canned gooseberries

Sterilisation refers to the complete destruction of all micro-organisms in food. Most food products are, however, only commercially sterile. This means that the degree of sterilisation only destroys pathogenic and toxin-forming organisms as well as all other types of organisms which, if present, could grow on the product and produce spoilage under normal handling and storage conditions.

The canned gooseberries require a heat sterilisation treatment to stabilise the product. Sterilisation is done in retorts. A great variety of retorts is available, ranging from still and agitated batch retorts to continuous retorts or

Process overview



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Fast facts

Time and temperature combinations:

100°C

The period of **7 – 8 minutes** at 100ºC is common for cans with dimensions of **81 x 111mm** to achieve an 85ºC internal temperature.

85°C

TAKE NOTE: It is strongly recommended that each processor adapts the processing time and temperature to his own unique circumstances as prescribed by a heat processing specialist.

hydrostatic cookers. The choice of retort influences the time of exposure needed to stabilise the product.

The still retort is loaded, closed and steam is pumped into the closed vessel. The time/temperature combination depends on the type, the size and dimensions of the container. Assuming an initial temperature of 65,5 °C after exhausting and sealing, a time/temperature combination of 8 - 10 minutes at 100 °C is suggested for cans with dimensions of 88 x 116 mm.

Agitated batch and continuous retorts have more efficient heat transfer mechanisms and thus require much reduced processing times.

Cooling and drying of cans

The cans must be water-cooled as soon as commercial sterility of the product has been reached to prevent over-cooking of the product. This could spoil the appearance, flavour and texture of the product. Cold potable water mist spray is used to cool the cans to 37°C. Casing and stacking of cans at temperatures substantially above 37 °C may result in quality deterioration known as "stack-burning". This involves too slow cooling and spoilage by thermophilic bacteria.

The cooled cans are air-dried by fans before being labelled and placed in storage.

Labelling of canned fruit products

Care must be taken to ensure compliance with the regulations with regard to composition and correct description of the contents according to regulations relating to the grading, packing and marking of canned fruit intended for sale in the Republic of South Africa.

Products must be correctly labelled according to the requirements set out in the Regulations relating to the grading, packing and marking of canned fruit intended for sale in the Republic of South Africa.

Legislation involving fruit products

Labelling in South Africa is controlled by legislation. Anyone who wants to use the information provided in this document must familiarise him/herself with all the applicable laws that apply to the producing, processing, manufacturing and storage of the products referred to in this document.

Other processing options

Below is a list of other processing options for gooseberries not covered in this report, but available from Eskom.

***Individually quick-frozen gooseberries*:** Fresh gooseberries are individually quick frozen (IQF) to preserve the cell structure, texture, colour, flavour and aroma of the berries. This produces a product that is ideal for integration into muffins and other bakery products as well as sweet fillings and sauces.

Gooseberry concentrate: is basically gooseberry puree that has been concentrated. The gooseberries are pulped, depectinised and concentrated to produce a product that can be used in confectionery products, beverages, sauces, flavourings and fillings and in fruit juices after dilution. The product is preserved by freezing.

Gooseberry juice: may be manufactured from fresh or frozen gooseberries. Gooseberry juice is mainly used in juice blends since there is a limited demand for pure gooseberry juice. Gooseberries for juicing should be harvested at full size, but before turning colour.

Gooseberry puree : is prepared by crushing and pulping fresh gooseberries. Some of the seeds and skin may be removed by filtration, depending on the final use of the product. The puree is preserved through pasteurisation and freezing

Alternative funding

Five alternative funding product offerings are available to help reduce your investment costs for agro-processing or agro-beneficiation businesses. For more info visit: http://www.eskom.co.za/sites/idm/Business/Pages/Alternativefunding.aspx

Energy Advisory Services

Eskom's role is to aid the client with basic information in the decision making process. Thereafter the Eskom Advisor will fulfil the role of energy advisor as part of the team that the farmer selects.

Optimise your energy use

Eskom's Energy Advisors, in regions across South Africa, offer advice to business customers on how to optimise their energy use by:

- Understanding their energy needs
- Understanding their electrical systems and processes
- Investigating the latest technology and process developments, including electric infrared heating and drying systems
- Analysing how to reduce energy investment costs
- Optimising energy use patterns in order to grow businesses and industries

Call 08600 37566, leave your name and number and request that an Energy Advisor in your region contacts you. Alternatively, e-mail an enquiry to **advisoryservice@eskom.co.za**.

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