



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

NOSCOT



Econ report 141

NORTH OF SCOTLAND COLLEGE OF AGRICULTURE

Agricultural Economics Division

School of Agriculture, Aberdeen

GIANNINI FOUNDATION OF
AGRICULTURAL ECONOMICS
LIBRARY

WITHDRAWN
JUG 31 1983

THE SCOPE FOR EXPORTING SCOTTISH SOFT FRUIT TO DENMARK

MICHAEL E. DAW

July 1983

Economic Report No. 141

The North of Scotland College of Agriculture
Agricultural Economics Division

THE SCOPE FOR EXPORTING SCOTTISH SOFT FRUIT TO DENMARK

Michael E Daw

July 1983

Economic Report No. 141

CONTENTS

	Page
PREFACE	(i)
1. INTRODUCTION	1
2. THE MARKET FOR IMPORTED SOFT FRUIT	2
3. DANISH FRUIT MARKETING AND PRODUCTION	10
4. TRANSPORT POSSIBILITIES	14
5. THE SCOPE FOR SCOTTISH EXPORTS	15
Annex 1 - Organisations Assisting in the Study	17
Annex 2 - Fresh Fruit Prices, UK, 1978-81	18
Annex 3 - Frozen Raspberry Specifications	19

PREFACE

During 1981 and 1982, the Agricultural Economics Division of the North of Scotland College of Agriculture conducted a series of market opportunity studies for Scottish produce, funded by the Department of Agriculture for Scotland. The aim was to examine the scope for increasing Scottish agricultural exports to Continental Europe. One such study concentrated on the soft fruit market in West Germany and the Report was published in May 1982. During that investigation it became clear that Denmark, although much smaller might be attractive to Scottish fruit exporters and it was decided to extend the market research into Denmark. The present Report summarises the findings from ten days of field work and a short desk study of Danish statistics relating to trade, production and prices for strawberries and raspberries. In addition to the written report, the study produced a number of Danish contacts relevant to those planning fruit exports from Scotland. A list of the organisations visited is included at Annex 1 and personal contacts for each are obtainable from the author. The advice and assistance with the study received by the author in Denmark is gratefully acknowledged.

This report is the last of eight marketing studies directly financed by the Department of Agriculture for Scotland and published in the College's Economic Report series. It is hoped that these studies have improved the understanding both of new markets and Continental competition with Scottish produce. Our work will continue in this area for different products and different countries but we shall remain grateful for the pump-priming finance which initiated the marketing series two years ago.

Michael E Daw
July 1983

1. INTRODUCTION

In the autumn of 1981, a short investigation was carried out by the Economics Division of the North of Scotland College of Agriculture into the potential demand for exported soft fruit from Scotland to West Germany. This was the first of a series of marketing studies funded by the Department of Agriculture for Scotland. Other surveys covered a range of agricultural products (beef, pigmeat, cereals) and several Continental countries (France, West Germany, Belgium, Holland, Denmark). Results were published during 1982 in the "Economic Report" Series (Nos. 134 to 140).

The study⁽¹⁾ of potential soft fruit exports to West Germany concluded that there was a strong demand for Scottish frozen raspberry products (given some easing of the high sterling-deutschmark rate) and that there is scope for exports of fresh strawberries albeit on an opportunistic basis. The German study also identified a potential, although smaller, demand in Denmark for both fresh and frozen fruit. Danish imports are high in relation to its population, the Danish fruit processing industry is large, and consumers are accustomed to high quality fruit throughout the year. This suggested that Denmark could also be a useful destination for Scottish exports, particularly since the quantities available are fairly modest. The study of the Danish market potential was commenced in December 1982 with ten days' field work in Copenhagen, Aarhus and Odense, followed by a brief analysis of Danish statistics.

The present Report is a summary of that investigation and represents the last of the current series of eight marketing reports funded directly by DAFS and conducted at Aberdeen.

The background to this investigation was a rather depressed Scottish fruit industry facing a sluggish domestic demand and competition for processed fruit from Eastern Europe. In terms of exports, the sector had been suffering from a high sterling exchange rate vis à vis the Continent - the main foreign market for Scottish soft fruit. Efforts by growers and grower-co-operatives to increase the more lucrative fresh market fraction of fruit have partially succeeded and some marketing groups are increasingly interested in fresh exports. Since the Scottish crop is the latest harvested on any scale in Europe, it was felt that late season strawberries and raspberries (late July, early August) might command a premium in Scandinavia.

Denmark is the most natural Scandinavian market for Scotland because of good communications and since the country is already a heavy importer of soft fruit - partly for its large processing industry. Also, sizeable exports to Denmark had occurred in 1979 and 1980 for manufacture and it was felt that an expansion of trade might occur in future, based on the favourable reputation of the Scottish product.

This report reviews the potential of the Danish market and draws preliminary conclusions on the priority products for export development from Scotland. It also includes a brief description of the Danish fruit industry in terms of production, marketing and processing.

Export possibilities are discussed against the background of comparable prices in the UK, transport costs, and the relatively small scale of the Danish market.

(1) Daw, M E "Export Opportunities for Scottish Soft Fruit to West Germany", Economic Report No. 134, Aberdeen, May 1982.

2. THE MARKET FOR IMPORTED SOFT FRUIT

An Overview

Danish consumption of the main soft fruits⁽¹⁾ is around 20,000 tonnes per annum (including processed products) or about 4 kg per capita. Soft fruits account for 13 per cent of the consumption of all the main temperate fruits (Table 1) and strawberries are by far the most important soft fruit. At 8 per cent of these temperate fruits, strawberries are more important than the remaining soft and berry fruits and are larger, in volume than either cherries or plums although much less than the annual consumption of hard fruit. Specific data for raspberries are not readily available but it is likely that, in volume terms, consumption is less than 10 per cent of that for strawberries (including processed forms). There is very little tradition of dessert consumption of fresh raspberries.

Denmark imports large quantities of fruits and Table 1 indicates that the level of self-sufficiency for all fruits has been declining in the three years to 1981/82 when imports accounted for 62 per cent of consumption. In the case of strawberries, the annual imports are around 4,200 tonnes - some 40 per cent of annual consumption. For raspberries, black and red currants (grouped together) annual imports (5,200 tonnes) are more than 90 per cent of consumption although there are small exports of these fruits from domestic production.

Clearly, there is an import demand in Denmark for soft fruit but its relevance to the Scottish industry depends on timing, form and quality, as well as price.

Levels of Imports

The Danish market for imports spans a variety of soft fruits in many forms - from fresh through to processed products such as canned products and jams. In terms of strawberries and raspberries, the main import demand is for the fresh fruit (especially strawberries), frozen raspberries, and frozen, partly processed strawberries. Tables 2 and 3 show the relative importance of these various forms and their countries of origin, for the three years to 1981.

Fresh strawberries were imported in fairly large quantities for these three years during the period May to July. Some 65 to 80 per cent of imported supplies have been from Italy although volumes dropped sharply during this three year period, as did total imports. In the off-season (after August), fresh strawberry imports are small, coming almost entirely from Italy, Spain and Israel.

The import of fresh raspberries are not isolated in the statistics, being grouped with redcurrants, but figures for both fruits are shown in Table 2. Volumes are small but the UK is the main source of imported supplies. This fruit, however, is unlikely to be for the fresh market but rather for processing into juices etc, using fresh raw material transported overland in its chilled form.

Semi-processed fruit is mainly imported in frozen form (Table 3), this trade being larger than for fresh soft fruit.

(1) Strawberries, raspberries, black and red currants.

Table 1 Commercial Production, Trade and Consumption of Main Temperate Fruits in Denmark¹

	'000 tonnes			
	Production	Export	Import	Consumption
Strawberries				
1979/80	8.0	0.6	4.1	11.5
1980/81	7.7	1.6	4.6	10.7
1982/83	8.6	2.0	4.0	10.6
Black and Red Currants and Raspberries				
1979/80	1.4	0.4	4.9	5.9
1980/81	1.5	1.0	5.1	5.6
1982/83	2.0	2.4	5.7	5.3
Cherries				
1979/80	5.2	1.1	0.6	4.6
1980/81	6.9	1.9	0.7	5.8
1982/83	6.4	2.5	1.1	5.0
Plums				
1979/80	1.6	0.2	3.5	4.9
1980/81	1.2	0.1	3.4	4.5
1982/83	1.1	0.1	3.5	4.5
Pears				
1979/80	5.5	0.5	10.9	15.9
1980/81	4.2	0.8	11.8	15.2
1982/83	5.8	0.8	11.3	16.2
Apples				
1979/80	79.6	19.5	33.7	93.8
1980/81	58.9	11.1	46.8	94.6
1982/83	40.4	10.5	49.2	79.1
Total of Main Temperate Fruits				
1979/80	101.3	22.3	57.7	136.6
1980/81	80.4	16.5	72.4	136.4
1982/83	64.3	18.3	74.8	120.7

¹includes canned and processed forms.

Source: Landbrugstatistik 1981, Danmarks Statistik, 1982.

The value of imports of frozen strawberries (boiled) is some Kr 14 m per annum (2,200 tonnes) with most of the supplies originating in Poland. The UK had a minor export in 1980 worth Kr 0.6 m.

Imports of frozen raspberries and blackcurrants (grouped together in the statistics) amount to Kr 30 m each year with East European supplies dominating the market. However, the UK has exported substantial quantities of these frozen fruits although supplies have fallen sharply over the three years because of Polish competition and high sterling exchange rates. Frozen raspberries (IQF, block or plate frozen) is one

sector of the Danish import market with which the UK, and especially Scotland, has had experience in the past. The quality of the Scottish product is highly regarded and is in demand by the Danish processing industries. Denmark is a substantial net exporter of finished fruit products (juices, jams, canned) but this necessitates substantial net imports of frozen raw material and this appears to be the main market opportunity for the Scottish soft fruit industry in terms of penetrating the Danish market.

Table 2 Danish Imports of Fresh Soft Fruit by Country of Origin¹

tonnes

	Fresh Strawberries						Fresh Raspberries & Redcurrants		
	May - July			Aug - April			12 Months		
	1979	1980	1981	1979	1980	1981	1979	1980	1981
Italy	1,671	1,182	518	73	77	67	10		
Belgium/Luxembourg	176	243	142	5					
Holland	1	5	13	3	3	3			
Spain	62	6	267	36	33	40			
West Germany	93	35	16						
UK							91 (669) ²	136 (1,065)	152 (1,140)
France	9	98	13		6				
Poland		18	5				89	35	
Sweden		3					17	4	
Israel				74	34	32			
USA				8	5	1			
S. Africa				2	2				
Mexico				5					
New Zealand				1	1	1			
Hungary									69
Rumania									12
Total Imports	2,012	1,590	976	208	161	144	208	175	233
Total Value of Imports (Kr '000) (Kr/kg)	16,993 (8.5) ³	15,661 (9.9)	10,981 (11.3)	3,063 (14.7)	2,619 (16.3)	2,350 (16.3)	1,139	1,297	1,681
Total Exports ⁴ (tonnes)	4	42	112	13	4	33	-	20	32

¹Abstracted from External Trade of Denmark, Danmarks Statistik, 1979, 1980, 1981.

²Value in Kr '000.

³Average price of Imports in Kr per Kg.

⁴Mainly to Scandinavia and Danish Dependencies.

Table 3 Danish Imports of Frozen Processed Fruit, By Country of Origin¹

	Frozen Strawberries (boiled, no sugar)			Frozen Raspberries & Blackcurrants (no sugar) ²		
	1979	1980	1981	1979	1980	1981
Poland	2,098	1,763	1,963	1,522	1,486	1,836
Hungary				389	912	718
Rumania				27	10	14
Czechoslovakia				43	9	88
Yugoslavia			81	22		132
Bulgaria	36	19		50		
UK		28		1,197	725	458
		(583) ³		(12,946)	(7,024)	(4,958)
West Germany	126	41	53	471	72	199
Italy	38	104	55	15	11	16
France	2	13				
Holland	2	20	68	4		94
Belgium/Luxembourg		30	6			16
Norway				37	78	111
Sweden	15			382	36	75
New Zealand						25
Mexico	17					
Canada					19	
Total Imports	2,334	2,019	2,226	4,158	3,359	3,782
Total Value of Imports (Kr '000)	14,652	13,540	13,654	37,504	23,727	30,500
Total Exports (tonnes)	57	827	893	31	39	8

¹Abstracted from External Trade of Denmark, Danmarks Statistik, 1979, 1980, 1981.

²In the case of 1979, also includes redcurrants, blackberries, blaberries and other minor berries.

³Value of UK Exports in Kr '000.

Table 4 Domestic Fresh Strawberry Sales on Copenhagen Wholesale Market 1981 and 1982

Week No	1981			1982		
	Vol (tonnes)	Value (Kr '000)	Average Price (Kr/Kg)	Vol (tonnes)	Value (Kr '000)	Average Price (Kr/Kg)
June 2 ¹	18	288	16	8	166	22
June 3 ¹	-	-	-	13	213	17
June 4	48	726	15	39	626	16
July 1	249	2,105	8	262	2,677	10
July 2	186	1,494	8	224	2,207	10
July 3	40	405	10	73	757	10
July 4	1	8	15	-	-	-

¹Mainly Glasshouse Crops.

Source: KGT - Copenhagen Wholesale Market.

Characteristics of the Fresh Market

Strawberries are very popular in Denmark, being the first fruit of summer with the main season extending from late April to mid July. Late winter supplies from Israel give way, first to Italian, then Spanish, French, German, then Belgian supplies, before the domestic crop is available which extends from mid June to mid July. Household use is principally as fresh strawberries (with cream) or for the home making of "jordbaegrød" and "rødgrød" and to a lesser extent for jams. Scottish fresh strawberries would only catch the tail end of the main season, as the Danish crop was finishing, and it seems unlikely that high prices would be realised at this time. After four months' availability of fresh strawberries, the Danish consumer and the retailer are looking to alternative fruits after mid July. The pattern of demand for domestic fruit is indicated in Table 4 where the volume and sales of fresh Danish strawberries through the Copenhagen wholesale market are included for each week. Local supplies tail off quickly after the middle of July and, in view of the availability of other fruits, it seems unlikely that price premiums will be available on any scale for later season fruit. There will, of course, always be a steady demand from the hotels and catering trade but the volumes required are unlikely to justify a refrigerated lorry of specialist fruit.

The quality of fresh fruit in Denmark is high and, for strawberries, a deep red colour is preferred. This favours varieties such as Zephyr and Senga Sengana and disfavors the paler Cambridge Favourite. Tiga and Douglas are imported, however, despite their pale colour, because of favourable shelf life. Fresh strawberries are sold in 500 gram punnets, not over-wrapped, and the fruit needs to be Class I, not too small and of a good colour. But the over-riding criterion is freshness which dictates very efficient transport arrangements. Wholesalers handling imported strawberries (of which there are four main companies) would normally require at least one lorry load per day (12-15 tonnes) during the main season with up to 3 lorries at its peak. Continuity of supply would be desirable but not essential, if selling through wholesalers.

Prices for fresh strawberries are highly variable between weeks and even between days - strongly affected by supplies and weather. Average wholesale prices at Copenhagen for Danish strawberries are shown in Table 4 for the last two years, by week. The lowest prices tend to occur during the first two weeks of July and, by the time the Scottish crop might be ready for export towards the end of July, prices could have risen slightly but the volumes demanded would be small. Wholesale prices for good quality imported strawberries in late July are likely to be in the range of Kr 12 to 15 per kg with corresponding prices at retail level likely to be between 40 and 60 per cent higher. This compares with a 100% mark-up (wholesale to retail) for low-priced, peak season strawberries. By comparison, Danish producer prices for strawberries of all destinations were Kr 7.64 (1979/80), Kr 8.19 (1980/81), and Kr 8.53 (1981/82).⁽¹⁾

The average imported price for fresh strawberries in the May to July period (Table 2) was around Kr 10 per kg for 1979 to 1981 inclusive. Surprisingly, the off-season price was only 50-60 per cent greater, which indicates that other fruits compete strongly with fresh strawberries for nine months of the year, thus controlling out-of-season fresh strawberry prices.

(1) Landbrugstatistik 1981, Danmarks Statistik 1982.

The Danish market for fresh raspberries for fresh consumption is extremely small, partly because there is little experience of raspberries as table fruit and partly because supplies, both domestic and imported, are very low. Domestic supplies are small because of the high costs of picking and the low area grown, and import levels are extremely small because of transportation difficulties. Figures in Table 2 for imports of fresh raspberries and redcurrants (mainly from the UK) relate more to fresh berries for the processing market than for ware. Raspberries are highly seasonal with the main market occurring in the last three weeks of July, being supplied by the domestic crop. Quality is important and particularly freshness. Because of the high price, raspberries are sold in 250 gram plastic containers, though in only small volumes per store. As an example, one national chain of 30 supermarkets sold only 250 kilograms of fresh raspberries valued at Kr 12,500 in 1981/82, compared with 65 tonnes of fresh strawberries in the same year at a value Kr 1.4 m. The specialist nature of the crop is obvious.

Wholesale prices for fresh raspberries are typically double those for strawberries for similar weeks (more, at retail level). Table 5 indicates wholesale prices of around Kr 20 per kg in the peak season rising to around Kr 25 per kg towards the end - the weeks which might be relevant to Scottish growers.

Table 5 Domestic Fresh Raspberry Sales on Copenhagen Wholesale Market 1981 and 1982

Week No	1981			1982		
	Vol (tonnes)	Value (Kr '000)	Average Price (Kr/Kg)	Vol (tonnes)	Value (Kr '000)	Average Price (Kr/Kg)
July 1	1.0	29	28	-	-	-
June 2	10.5	184	18	10.4	200	19
July 3	12.8	248	19	21.7	379	17
July 4	8.7	222	26	13.2	310	23

Source: KGT - Copenhagen Wholesale Market.

For both fruits, late season prices may be compared with the UK to indicate whether exports to Denmark are likely to be worthwhile. For **strawberries** the Kr 12-15p per kg price (late July) translates to 86p-107p per kg at Kr 14:£1.⁽¹⁾ The price graphs in Annex 2 indicate that late July UK wholesale prices in 1978-1981 have run at just under 100p per kg. Given an additional transport charge of 10p per kg, it appears that for most seasons the export of fresh strawberries would only rarely be profitable. However, for some seasons and in some weeks the Copenhagen price will exceed the wholesale price obtainable in the UK by more than the transport costs. But margins are narrow and export opportunities are unlikely to occur regularly so sales to Denmark would have to be somewhat opportunistic.

For **raspberries**, fresh wholesale prices in Copenhagen are likely to fall in the range Kr 23-27 per kg for late season produce. The corresponding sterling price is 164p-193p per kg (at Kr 14:£1) which compares

(1) The rate operative at mid June 1983.

favourably with the UK wholesale prices shown in Annex 2 for 1978-1981. These price relationships would favour fresh raspberry exports to Denmark in most seasons, given the technical feasibility and reasonable cost of transporting the fruit. However, even if feasible, the small size of the market should be recognised and the fact that only small shipments would be possible, and be very dependent on wholesale contacts in the Copenhagen market.

Characteristics of the Market for Frozen Strawberries and Raspberries

Frozen soft fruit is used in the jamming, canning, juicing and confectionery industries, as well as for flavouring yoghurts and ice creams, and for packaging into retail packs for sale in their frozen forms.

From discussions with some of the fruit processing industry, it seems that the intake of raspberries and strawberries for the jam-making industry is 4,000-5,000 tonnes annually of which 1,500-2,000 tonnes are raspberries. Nearly all this fruit is imported, the Danish processing crop being geared mainly to freezing and canning. The juicing industry is considerable in Denmark and raspberries and strawberries are used up to a combined level of around 1,000 tonnes. The fruit freezing industry is reputed to utilise at least 3,000 tonnes of strawberries per annum and rather smaller quantities of raspberries. Canning and jarring are less important (there is only one canner) with quantities of both fruits up to 2,000 tonnes per annum. In addition, there are considerable quantities of both fruits used by the confectionery industry and for flavouring dairy products.

Two examples of commercial specifications for block frozen and IQF raspberries are shown at Annex 3. Red fleshed strawberries are specified for some end uses which eliminates Cambridge Favourite except in years of shortage. The specifications for frozen fruit vary according to the end use but these are likely to stipulate uniformity, colour, evenness of ripeness, solids, tolerance for extraneous matter and quality of freezing. Typically, frozen soft fruit is shipped in 20-tonne containers so that joint loads would be necessary to move small quantities.

Individually quick frozen (IQF) berries are used for retail packs, catering and for confectionery, as well as for higher quality jams (raspberries). Approximately 70% of Danish households have food freezers and frozen retail packs of strawberries are in 500 gram units and those for raspberries in 250 grams. Plate frozen and block frozen fruit may be used for jams and for flavouring dairy products and some frozen pulp is used in flavouring (eg. strawberries). For juicing, some chilled fresh fruit is occasionally imported but otherwise IQF crumble (raspberries) is suitable or block frozen material. The canners normally take in fresh strawberries of red-fleshed varieties from domestic growers, although the industry is not large. Much of the raw material for the jamming and juicing industries is imported and virtually all the raspberries for processing and for frozen retail packs are imported. There is little seasonality in the demand for frozen raw materials but it may be that a substantial volume (eg. 100-200 tonnes) may be needed just prior to factories switching over to a particular fruit.

Imports are often arranged through agents, but direct sales would also be feasible. Although Poland and Hungary dominate this export trade into Denmark, Scottish frozen raspberries are held in high regard for quality and cleanliness.

An 18% import duty applies to non-EEC countries such as East Europe but their semi-processed fruit is often still competitive with Scottish produce. Furthermore, Danish exporters of finished fruit products with sugar added (juices) can reclaim the relevant amount of duty paid on imported raw material, provided that the exports are outside the EEC and qualify under the CAP regime for sugar.

Prices for these various commodities are obviously variable from IQF raspberries, down to strawberry pulp. Fruit for retail packs obviously commands the highest prices since retail prices are normally very high - up to Kr 70 per kg for raspberries and Kr 40 per kg for frozen strawberries. At the top end of the market, an IQF raspberry price of around Kr 14 per kg cif is economic only for the expensive, specialist sectors of the market (eg. confectionery, frozen retail packs or high quality jams) but there is a larger demand for block and plate frozen raspberries at half this price for juicing and medium quality jams. Frozen strawberries in blocks are rather cheaper. In some cases, fresh raspberries are used for jam manufacture and for juicing with the chilled, bulk raw material commanding a price of between Kr 7 and Kr 8 per kg.

From the data in Table 3, extracted from import statistics, the average cif price for frozen (boiled) strawberries was consistent between the three years at between Kr 6 and Kr 7 per Kg. The data on frozen raspberries and black currants (combined in the statistics) indicate average prices from Kr 7 to Kr 9 per Kg but the balance between the two fruits and the various frozen forms is not known. Raspberries would normally enjoy a substantial price advantage and, in view of the reputation and availability of the Scottish crop, raspberries would be the priority fruit for exporting.

3. DANISH FRUIT MARKETING AND PRODUCTION

To provide some background on the Danish industry to potential exporters, this study included visits and discussions to various organisations involved with both the production and marketing of soft fruit into the Danish market. An outline of some of the more relevant findings is included below.

Fresh Fruit Marketing

The most noticeable feature of the Danish marketing system is the much fuller development of the co-operative movement - operating at retail, wholesale and production levels and sometimes including an integration along all three. Thus, producers are grouped by geographical area and typically sell their produce on to the fresh market via large groups or one of the 15 regional GASAs which act as powerful marketing agents for producers. Currently, most GASAs sell through wholesalers to retail chains but, increasingly, the GASA is involved in marketing direct to the retail chains. The close co-ordination between the GASAs, the wholesalers and the retailers means that the need for, and use of, wholesale markets has been much diminished. Although wholesale markets do exist (and in a few cases still operate clock auctions) and some individual growers do sell their produce through them, their importance is declining, at least for domestic produce.

A second development which shortens the marketing chain is the close co-ordination between the large co-operative retail sector and the national growers' marketing organisation, Nordgrønt. Through the operation of major depots and terminals, growers are closely linked with the massive Brugsen store network (and increasingly with the Irma chain, since the 1982 takeover) without any need for wholesale markets. Nordgrønt also operates as a wholesaler for the group in terms of acquiring imported supplies through a jointly owned organisation, Nordisk Andelsforbund (NAF), which also imports for other Scandinavian co-operatives.

Food retailing is predominantly through supermarkets and this sector is increasingly concentrated with supplies now mainly acquired by direct negotiations with farmers organisations, in one form or another.

The role of the fruit and vegetable wholesaler is therefore increasingly limited to imports and, in this field, only five firms (three independent) handle 90 per cent of the produce. For potential exporters of fresh produce from the UK, these major national wholesalers would be an important first contact, and during visits to Denmark, there was considerable interest in the scope for exporting fresh raspberries and the more unusual fruits such as blackberries, blueberries and cranberries. Because of the problem of exporting one large load of specialist fruit, it would usually be necessary to split a load between different wholesalers. Although deliveries and destinations would be arranged in advance, the responsibility for transport and risk would be solely with the exporter and, further, prices would only be finalised after the produce was sold.

Finally it should be added that there is a considerable volume of fresh soft fruit sold direct from the grower, either self-pick or sold packaged at the holding. Cash sales are significant in the large strawberry sector but are relatively more important for raspberries where most of this small crop is sold retail ex-grower and so never moves through the commercial marketing chain. No Danish raspberries move into the processing sector.

The Marketing of Frozen Fruit

Danish manufacturers in the juicing and jam-making industries import either direct or through foreign suppliers (including the UK). The latter may be individual producers, or producer groups or more commonly, frozen fruit commission agents who buy up produce in the country of origin. In Britain there are several such agents who already have some links with Danish processors or Danish agents, who, in turn, acquire supplies on behalf of the manufacturers. Exporting frozen produce can therefore be direct (producer to manufacturer) or involve an agent in either one or both countries. Danish agents handle a wide range of frozen fruit products and their role is to link potential exporters with buyers in Denmark. Commission is usually three to four per cent. Danish manufacturers normally expect a cif price quotation and payment is normally made against letters of delivery ie. after the produce has been received and inspected.⁽¹⁾

In terms of the Danish crop destined for processing, arrangements are usually made between producer groups and the factories concerned. Some groups are also involved in grading and freezing themselves either on contract for particular manufacturers or for later sale.

The Danish Soft Fruit Production Industry

To assist with assessing the competitiveness of the Danish industry to potential exports, an outline is given below of the structure and productivity of soft fruit production in Denmark.

In 1981, there were 1,363 ha of strawberries recorded in Denmark, grown on 1,374 holdings, scattered in various parts of the country but with half the area grown on Funen (Table 6). Total crop was 8,900 tonnes in 1981, a rise on the previous two years mainly because of an increase in area. Raspberries are much less important; only 95 ha were recorded (half on Funen) being grown on 231 holdings. Recorded production was only 187 tonnes which represented a fall on the previous two years caused by a small drop in area.

These holdings tend to be specialist units growing small areas of a variety of fruit crops often run on a part-time basis. In 1981, 50 per cent of the Danish area for fruit and berries was grown on farms growing less than 10 ha and there were very few large scale growers (80 holdings growing more than 20 ha of fruit and berries accounted for 3 per cent of growers and 28 per cent of the area grown). These small units are well organised in terms of marketing by the well developed co-operative network, selling much of their produce via the various GASAs and other marketing groups. There is also a strong co-operative element running through the production process with an advisory service run on voluntary co-operative lines and financed 30 per cent by members who pay fees for the various services. The production industry is also well served by teaching and research institutes - mainly based on Funen. Nevertheless there still are substantial numbers of growers who operate quite individually in terms of production and marketing and sell produce on local markets or to known contacts.

(1) Considerable interest in frozen raspberries was expressed by three manufacturers and two agents during the visit to Denmark.

Table 6 Danish Soft Fruit Production 1981

	<u>Strawberries</u>			<u>Raspberries</u>			<u>All Fruit and Berries</u>	
	Area (ha)	Production (tonnes)	No. of Holdings	Area (ha)	Production (tonnes)	No. of Holdings	Area (ha)	No. of Holdings
Denmark	1,363	8,869	1,374	95	187	231	9,697 ¹	2,724
Funen	588			42			4,213	
Ribe	114			3			124	
W. Zealand	114			8			1,374	
Storstrøms	101			8			1,300	
S. Jutland	78			6			190	
Aarhus	67			3			465	
Frederiksborg	65			11			588	
N. Jutland	61			2			263	
Vejle	58			2			389	
Ringkøbing	53			0			67	

Source: Danish Agricultural Statistics 1981.

¹Includes 4,900 ha apples, 560 ha pears, 1,564 ha sour cherries, 648 ha blackcurrants.

Over the last three years Danish **strawberry** yields have averaged 7 tonnes per ha - broadly similar to Scottish average production. Producer prices have averaged Kr 8.5 per kg (for all uses). At an equivalent price of 60p per kg, this is comparable with the Scottish figure, falling between the open market and canning prices. However, picking costs are much higher in Denmark (approximately double per kg), reflecting the effectiveness with which minimum wage rates have been implemented for casual labour. Data from a group of 150 larger growers near Odense⁽¹⁾ suggest that picking costs in 1982 amounted to 40 per cent of the return to the grower net of marketing costs, for crops which were mainly destined for the freezing market. At similar yields, the main advantage enjoyed by Scottish growers is the lower wage cost. It would appear that margins from strawberry growing are low in Denmark and this is supported in a survey⁽²⁾ conducted in 1981 which showed that fruit and berry growers yielded the smallest profit of any other type of horticultural holding.

Despite the small scale of strawberry growers and the narrow margins, the total hectareage has increased slightly over the last three years (by 3½ per cent per annum). However with wage rates still rising and strawberry prices in 1982 depressed, the near future may see a fall in the area grown which could give some small extra potential for exports into Denmark.

The effect of high wage rates of **raspberries** has already been apparent with a fall in the area grown having been experienced now for a number of years such that the crop is now grown on a very small scale indeed. With picking costs at Kr 50 per hour and recorded yields of 2.5 tonnes per ha the economics of raspberry production mean that the crop increasingly becomes concentrated on small family units where cash sales

(1) Fyns Baerdyrnerforening.

(2) Gartneri-regnskabstatistik 1981, Jordbrugsøkonomisk Institut 1982.

are possible at the farm or self-pick systems can be practised. However, the breakthrough with raspberries will soon be the introduction of mechanical harvesting using Danish and American machines on specially designed plantations. Early work conducted by KV Saft A/S suggests that machine harvesting will cut picking costs from Kr 8 - Kr 9 per kg by hand to Kr 3.5 per kg by machine on high yielding crops. If raspberry harvesters become widely used then this will erode the main advantage enjoyed by the Scottish industry (ie. low unit labour costs), and it could be that the scope for exports will be reduced as the domestic crop expands.

In summary, Scottish strawberry growers have the advantage of much lower picking costs whilst other costs, and yields, are comparable with Danish growers. For raspberries, Scottish producers have much lower production costs because of the high labour intensity of the crop at the same time as producing yields far in excess of their Danish counterparts. However if mechanical raspberry harvesting becomes acceptable and economic, this will reduce but not eliminate the competitive edge currently held by the Scottish grower. Mechanisation will also increase competition from other more distant exporting countries such as Canada, the USA and New Zealand.

4. TRANSPORT POSSIBILITIES

One of the main problems facing potential exporters to Denmark is that of the feasibility and cost of transport. For fresh fruit destined for the fresh market, there has been little or no experience of transporting produce over such a long haul, including a ferry crossing. Firm quotations are therefore difficult to obtain but it is possible to infer a price from Tayside to Copenhagen of 10-15p per kg for chilled containers carrying palletised stacks of trays with Tectrol treatment. In practice there would need to be some trial shipments on a small scale, combining soft fruit with other chilled commodities. In this case the marginal cost of transporting strawberries and raspberries could be somewhat lower.

There is also the problem of scale in transportation - loads really need to be at least 10 tonnes and preferably more than 15 tonnes to remain economic. Such a volume may be excessive for producers (especially for raspberries) and for any one importer. Mixed loads are not really feasible for fresh produce in July and August from the UK - unlike Dutch exporters who will make up a load with a variety of produce. If a sufficient tonnage of fresh fruit was loaded in Scotland then it would be necessary to subdivide between importer-wholesalers rather than consign to one only.

The main experience of shipping fresh fruit (raspberries) from East Scotland to Denmark was using refrigerated container lorries to transport 200 Kg polydrums of fruit for juicing and jamming. 100 polydrums, three quarters full, stacked on a 12 metre trailer is equivalent to 15 tonnes of fruit. The method involves cooling the fruit at a maximum rate, from departure until arrival at Esbjerg and travelling across Denmark to Zealand without further refrigeration. This is an operation particularly suited to return loads from Danish bacon transportation and costs are therefore competitive. A recent estimate for such transportation of 15 tonne loads from Perth to Copenhagen suggests an all-in cost of 6p per kg. Alternatively, specialist 20 tonne refrigerated tankers are used to import fresh fruit for the juicing industry. In this case, chilled fruit may be sold on f.o.b. basis. Bearing in mind the lower total cost of shipping fresh chilled fruit rather than block freezing and shipping frozen material, this would seem to be the cheapest way of moving soft fruit for direct processing in Denmark during the harvest period.

A similar price to the above would operate for 15 tonne loads of frozen fruit - representing a £60 per tonne add-on cost for exports to Denmark, compared with Scottish use.

For high priced fresh fruit (eg. late season raspberries) air freighting might appear to be an outside possibility, particularly since there are three direct flights per week between Aberdeen and Copenhagen. Recent quotations for cargoes exceeding 100 kg suggest an airport to airport cost of 112p per kg. This suggests that wholesale prices in the Copenhagen area must be extremely high (up to £1.50 per kg higher than local prices in Scotland) to justify the extra arrangements, risk and freight costs. Such situations are likely to be extremely rare.

In summary, transporting produce for the fresh market will be experimental as regards technical possibilities and costs. Air freighting seems to be uneconomic. Overland transport using refrigerated container lorries is likely to cost 6p per kg (84 øre per kg) and this would appear to be attractive for frozen produce as well as for chilled, fresh material destined for processing as juice or jam. The advantages of shipping fresh material for juicing at harvest time are the retention of aroma and the lower cost insofar as the freezing process is eliminated.

5. THE SCOPE FOR SCOTTISH EXPORTS

The Danish market for strawberries and raspberries is very discerning on quality but small in volume. The import demand for all forms is no more than 8,000 tonnes, annually, of which 80% is supplied from East Europe (for processing) and Mediterranean countries (early, fresh). However, this relatively small size of the potential market could well suit the Scottish industry with its modest export availability. Scottish frozen raspberries are already well known in the Danish industry and the reputation is excellent. An expansion of exports partly depends on the exchange rate but also on the aggression and interest shown by our exporters. In the case of fresh fruit (of which there is limited experience of the Scottish product), the Danes remain to be convinced of the feasibility of transport.

The priority products for exporting to Denmark are, first, frozen raspberries (in its several forms), followed by bulk fresh raspberries for juicing and jamming, then frozen strawberries and, finally fresh raspberries for the dessert market.

Fresh strawberries are only likely to be attractive to exporters on rare occasions because late season berries are not in demand and command only a small premium for low volumes (certainly less than a refrigerated truck load of 15 tonnes of fruit).

On the other hand, **fresh raspberries** are expensive in late July - early August on the Copenhagen market. The premium over UK wholesale prices will often be in excess of 40p/kg although volumes are small mainly due to low availability of the domestic crop. At this price differential, it would appear to be worthwhile exploring different means of packaging and transport, and of developing firmer fruit, longer term.

Scottish raspberries enjoy substantial cost advantages over the Danish crop (eg. labour costs, yield) and, if a means could be found of successful transport, then the fruit could be sold, fresh, at attractive prices which would cover haulage costs. Air freighting however, is not a realistic alternative, costing upwards of £1 per kg, ex-Aberdeen.

Fresh Raspberries sold for processing during late July and August, however, could be expanded from the present low and irregular level. At least two processors (juicing and jamming) are interested in developing this trade in the chilled, bulk form. Refrigerated transport costs are modest (6p/kg) because of return load facilities and the cif price (50-60p/kg) may be competitive with UK outlets. The high cost of block or IQF freezing at source is, of course, eliminated. But it should be emphasised that the system does require more management and supervision compared with the simplicity of transporting the frozen product.

The market for frozen fruit for processing is considerable (5,000 to 6,000 tonnes annually) of which 40% is strawberries but Poland and Hungary have, in the past, dominated imported supplies (90% of strawberries, 70% of raspberries).

The potential for exporting **frozen strawberries** to Denmark deserves further examination (where colour is unimportant) by obtaining firm price quotations and comparing them with prices from British manufacturers. Transport costs (Tayside/Grampian to Copenhagen) are around £60/tonne for frozen produce which compares well with haulage to S E England, partly because of the Ess-food return load option.

Scottish **frozen raspberries** have been the main form of fruit exported in the past and, in view of their good reputation amongst Danish traders and users, this seems likely to continue. Only adverse exchange rates

are likely to hold future exports down at their low level of 1981. There seems every prospect of an expansion of this trade but this may require Scottish producers to develop more direct links with Danish manufacturers and Danish agents. Prices around £1,000 per tonne are payable at the top end of the market for IQF raspberries and, it is this high quality produce which Scottish producers should aim at exporting. There is also a keen demand for block and plate frozen material but our ability to compete with Eastern Europe will be more strongly affected by prevailing exchange rates.

Finally, there is a substantial market for semi-processed black currants and red currants which deserves more investigation and there appears to be periodic shortages of some of the specialist berries which are needed in small volumes eg. cranberries, blaberries and lingonberries.

In summary, Denmark offers a small but attractive market for frozen soft fruit and for chilled fruit for processing. Both could be expanded. Fresh market prices are only consistently attractive for raspberries and this raises unanswered questions of transport feasibility. If, in the longer term, careful picking and cold chain harvesting and transport were practised with firm, transportable varieties then the scope for marketing large volumes of dessert raspberries would be considerable - both in Denmark and the UK. But, in the short term, Scottish exporters should concentrate on the Danish processing industry where there is a strong demand for Scottish raspberries in its various forms.

ANNEX 1 - ORGANISATIONS ASSISTING IN THE STUDY

Embassy of Denmark, London

Danmarks Statistik, Copenhagen

Danish Chamber of Commerce, Foreign Trade Department, Copenhagen

Ministry of Agriculture, Horticulture Division, Copenhagen

Royal Veterinary and Agricultural University, Copenhagen

Agricultural Council, Copenhagen

Dansk Erhvervsfrugtavl, Odense

GASA Odense AmbA, Odense

Nordgrønt AmbA, (FDB) Albertslund

Nordisk Andelsforbund (NAF), Copenhagen

NEFF Frugtexport, Allerød

Københavns Engros Grønttorv, (KGT), Valby, Copenhagen

H Lembcke, Valby, Copenhagen

Irma Frugt, Valby, Copenhagen

Interfrugt, Valby, Copenhagen

Dansk Supermarked A/S, Aarhus

K V Saft Vallø A/S, Køge

Odense Konserverfabrik, Odense

Skaelskør Frugtplantage A/S, Skaelskør

Svendborg Konserverfabrik A/S, Svendborg

Møller and Melgaard, Copenhagen

Henry Olsens Sønner Aps, Copenhagen

Carl B Feldthusen, Copenhagen

Ess-food, Copenhagen

BCC (Ess-food Transport), Esbjerg

SAS Airlines, Copenhagen

British Embassy, Copenhagen

British Overseas Trade Board, Glasgow

Central Council for Agriculture and Horticulture Co-operation, London

ANNEX 2

FRESH FRUIT PRICES, UK, 1978-81

Figure 1 British Wholesale Prices at Nine Markets for Class 1 Strawberries

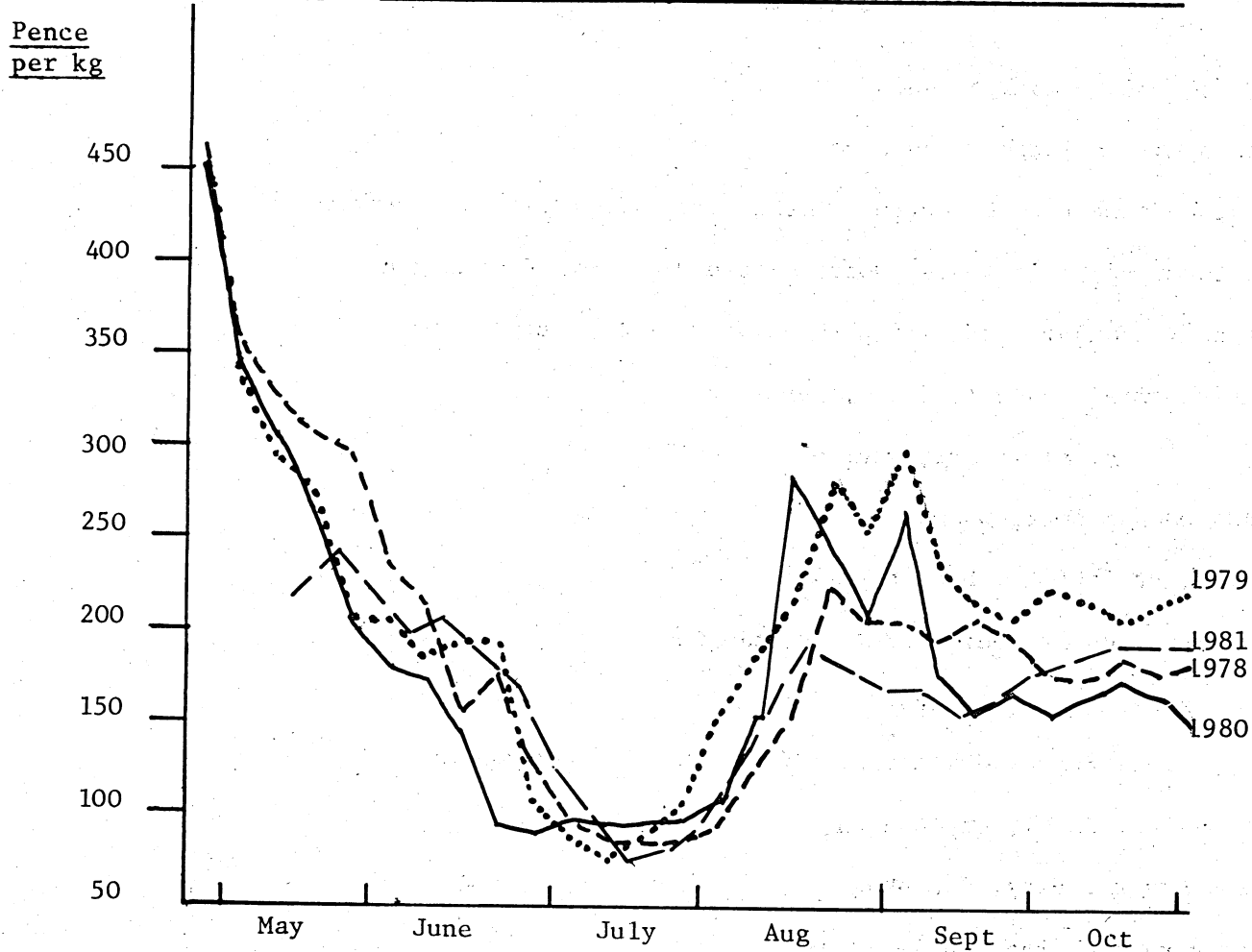
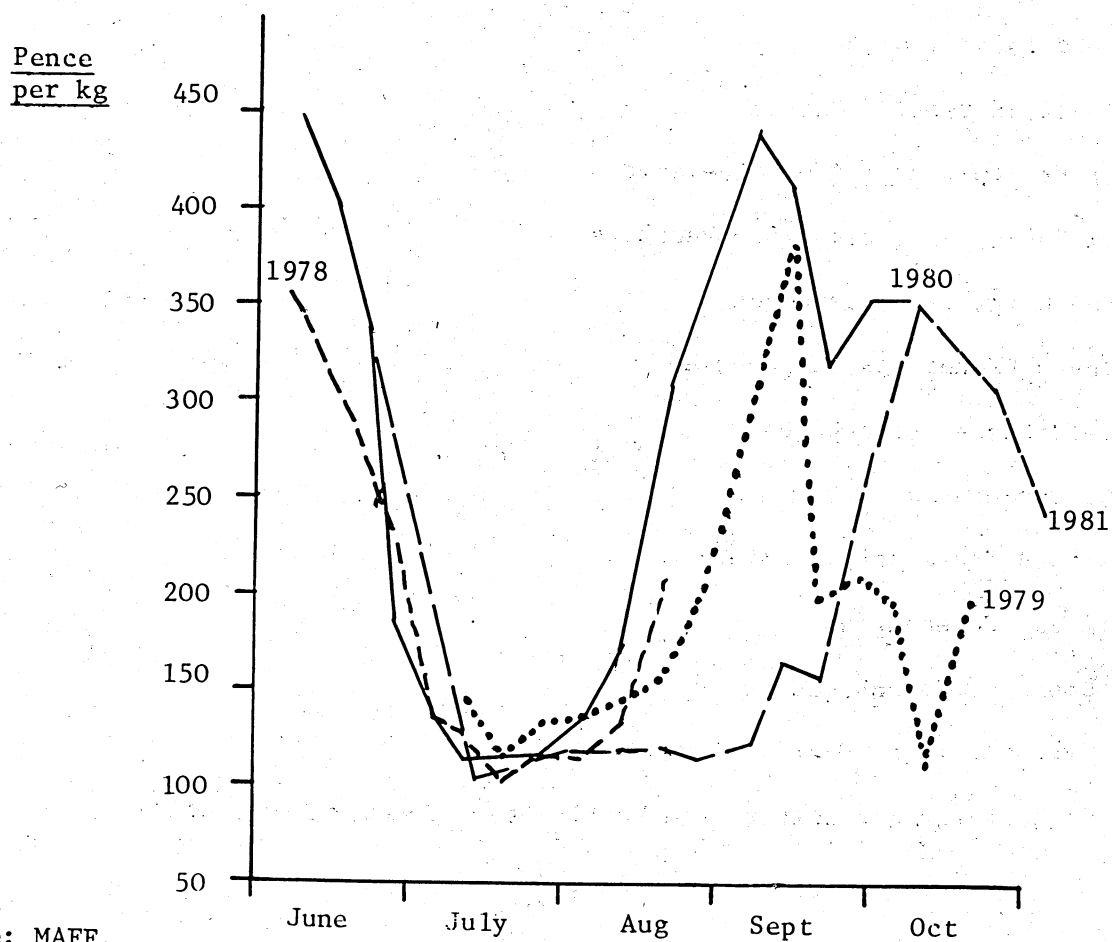


Figure 2 British Wholesale Prices at Nine Markets for Home-grown Class 1 Raspberries



ANNEX 3 - FROZEN RASPBERRY SPECIFICATIONS

The following specifications are typical of those applying to imported raspberries for jam manufacture in Denmark.

QUALITY SPECIFICATION

Article, Blockfrozen Raspberries, not strained. Quality II. No. 60671

Field

This specification comprises blockfrozen raspberries of red varieties of the species *Rubus Idaeus* L. intended for the production of jam.

Product definition

Blockfrozen raspberries shall be made from fresh, clean, sound and ripe, husked berries of firm consistency with all characteristics of red varieties of *Rubus Idaeus* L.

Process definition

Blockfrozen raspberries shall be frozen in suitable equipment so that the freezing is to be continued in the process until the centre temperature is max. -18°C . The product shall then be kept at a temperature not exceeding -24°C .

Quality requirements

Organoleptical requirements, Good, uniform, characteristic colour
Clean, sound berries
No form of smell or taste foreign to the product
Compliance with the existing Danish legislation on pesticide residues.

Other requirements, Max. 0.05% (W/W) mineral impurities
Practically free from uncoloured berries or partly uncoloured berries.
The juice from the blockfrozen berries is to contain at least 8.5% solid matter.
Practically free from stems or hulls
Practically free from organic material foreign to the product
Practically free from diseased berries
Practically free from undeveloped berries
Practically free from worms
The berries must not be strained.

QUALITY SPECIFICATION

Article, Deepfrozen Raspberries, Free-Flowing. Quality I. No. 60670

Field

This specification comprises deepfrozen, free-flowing raspberries of red varieties of the species of *Rubus Idaeus* L. intended for the production of jam and de luxe jam.

Product definition

Free-flowing, deepfrozen raspberries shall be made from fresh, clean, sound, and ripe, hulled berries of a firm consistency with all characteristics for red varieties of *Rubus Idaeus* L.

Process definition

Free-flowing deepfrozen raspberries shall be frozen in suitable equipment to secure that the freezing is effected at an appropriately quick speed. The freezing shall continue in the process, until the centre temperature is max. -18°C . The product shall then be kept at a temperature not exceeding -24°C .

Quality requirements

Organoleptical requirements, Good, uniform, characteristic colour
Clean, sound berries
No form of smell or taste foreign to the product
Compliance with the existing Danish legislation on pesticide residues.

Other requirements, Max. 10% W/W blockfrozen berries which cannot easily be separated.
Max. 0.05% (W/W) mineral impurities practically free from uncoloured berries or partly uncoloured berries.
The juice from the free-flowing berries shall contain at least 8.5% solid matter.
Practically free from stalks and hulls
Practically free from organic material foreign to the product
Practically free from diseased berries
Practically free from undeveloped berries
Practically free from worms
The berries shall be partly whole or segments.