1ª Conferencia Mundial del Mejillón

15-16 septiembre 1997

Vigo'97

First World-Wide Mussel Conference

15-16 september 1997

Asociación Nacional
de Fabricantes de
CONSERVAS DE PESCADOS
Y MARISCOS
(ANFACO)

CECOPESCA
Centro Técnico Nacional
de Conservación de Productos
de la Pesca.

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Lagoas-Marcosende (Vigo).
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PRESENTACIÓN

El mejillón representa para Galicia el producto marino más importante procedente de la acuicultura, así como uno de los productos más importantes para la industria conservera.

Por ello, ANFACO-CECOPESCA se planteó como objetivo con la organización de la 1.ª Conferencia Mundial del Mejillón "Vigo 97" buscar un mayor conocimiento del cultivo, transformación y comercialización del mejillón a nivel mundial, debatiéndose los aspectos más importantes sobre este molusco, para que los sectores industrial y productivo puedan ganar el reto del futuro tanto en competitividad como internacionalización.

Sin duda, muchos de los debates incluidos en la Conferencia irán dirigidos a que el mejillón, tanto en cuanto a su cultivo como en cuanto a su comercialización, tenga un mejor destino, estudiando aspectos tan importantes como el abastecimiento y desenvolvimiento del mercado actual y futuro, características, problemática y ventajas competitivas, situación actual y necesidades de I+D, control y verificación, calidad, innovación y transferencia de tecnología en el cultivo y transformación industrial del mejillón.

El desarrollo de esta Conferencia en Galicia viene marcado por la necesidad de que nuestra comunidad siga teniendo un protagonismo especial y pueda ser la voz de Europa y punto de referencia a nivel mundial de la pesca, la acuicultura y su transformación, y en especial en la producción y mercado del mejillón, para lo cual el sector cultivador de mejillón e industrial transformador del mismo, tanto en conserva como en congelado, han realizado un importante esfuerzo inversor en los últimos años, el cual no ha estado exento de dificultades y cambios, con el fin de incrementar su productividad, mejorar su estructura financiera y consolidar su posición en los mercados.

En este orden de cosas, sin duda Vigo, ciudad desde siempre volcada hacia el mar, es el marco ideal para abordar en profundidad toda esta problemática.

Las crecientes necesidades de materias primas para la industria seguirán estimulando cada vez más la renovación y la profundización de los conocimientos relativos al abastecimiento, la calidad, la conservación y la comercialización del mejillón.

Para ello, se ha recabado la presencia de personalidades y expertos de los cinco continentes, representando a más de una decena de aquellos países que lideran la producción de mejillón y que aglutinan más del 95% de la producción y su transformación mundial. Entre otros, están representados en esta Conferencia países tan relevantes en el ámbito de la miticultura como China, España, Holanda, Francia, Chile, Sudáfrica, Irlanda, Italia, Nueva Zelanda y Canadá entre otros, además de contar con una relevante representación del sector mejillonero gallego en sus múltiples vertientes.

Es conveniente reseñar que con la programación de la 1.ª Conferencia Mundial del Mejillón "Vigo 97" ANFACO-CECOPESCA demuestra una vez más el interés en colaborar con el sector meji-

llonero y su sensibilidad a las problemáticas del mismo, labor que tiene especial relevancia en el reconocido liderazgo de ANFACO-CECOPESCA en la labor investigadora en el campo de la calidad y el control de las biotoxinas marinas y que desde aquí nos comprometemos a continuar en el futuro, así como reiteramos la firme voluntad de ANFACO-CECOPESCA de afrontar el reto de reflexionar sobre la relación entre el sector extractivo e industrial y establecer nuevas vías de diálogo y entendimiento mutuo.

Estamos convencidos de que iniciativas como ésta definen, en general, la vocación de mejora continua del sector conservero gallego, un sector de carácter estratégico y creador de riqueza para nuestra economía que día a día trata de garantizar la continuidad de una labor que en muchos casos supera el siglo de vida, y en particular, el liderazgo de una asociación que mantiene vigente desde la constitución en 1904 de la pionera Unión de Fabricantes de Conservas de Galicia Cooperativa, su papel de organización dinamizadora del sector.

Por otro lado, sólo nos cabe agradecer la inestimable colaboración de la Consellería de Pesca, Marisqueo e Acuicultura, Secretaría General de Pesca Marítima-FROM, Excma. Diputación de Pontevedra, IGAPE, CAIXAVIGO, Excmo. Concello de Vigo, Consorcio de la Zona Franca de Vigo, DRAGOCO, CAIXAGALICIA y Banco Gallego, entidades todas ellas que han apostado y colaborado decididamente en la organización de este evento, así como la excelente acogida que esta iniciativa ha tenido entre las distintas instituciones y empresas asociadas y asociadas-adheridas a ANFACO.

Finalmente, deseamos expresar nuestro convencimiento de que la consulta de este libro sin duda servirá de valiosa herramienta para hacer perdurar en el tiempo las intervenciones con que las personalidades y expertos participantes en la Conferencia nos han obsequiado, así como nuestro especial agradecimiento a la Excma. Diputación de Pontevedra e IGAPE, por la amable colaboración prestada para la edición de este libro.

D. Juan M. Vieites Baptista de Sousa
Secretario General de ANFACO

CON LA COLABORACIÓN DE LA

DIPUTACIÓN PROVINCIAL DE PONTEVEDRA

E

IGAPE
INSTITUTO GALEGO DE PROMOCION ECONOMICA

EDITA

ASOCIACIÓN NACIONAL DE FABRICANTES DE CONSERVAS DE PESCADOS Y MARISCOS (ANFACO)

CON LA COLABORACIÓN DE

EXCMA. DIPUTACIÓN PROVINCIAL DE PONTEVEDRA

E

INSTITUTO GALEGO DE PROMOCIÓN ECONÓMICA (IGAPE)

IMPRESO EN

GRÁFICAS LUAR

DISEÑO Y MAQUETACIÓN

PUBLICACIONES VIGO, S.L. "PUVLIS"

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- Samuel J. Juárez Casado, *Secretario General de Pesca Marítima del MAPA.*
- D. Manuel Fraga Iribarne, *Presidente de la Xunta de Galicia.*
- D. Juan M. Caamaño Cebreiro, *Conselleiro de Pesca, Marisqueo e Acuicultura.*
- D. Manuel Pérez Alvarez, *Alcalde del Excmo. Ayuntamiento de Vigo.*
- D. Bernardo Alfageme de Riva, *Presidente de ANFACO.*

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"PRODUCCIÓN, MERCADO E INDUSTRIALIZACIÓN DEL MEJILLÓN EN EL MUNDO (VISIÓN TRANSNACIONAL)"

- Ms. Helga Josupeit, *Fishery Industry Officer. Food and Agriculture Organization of the United Nations (FAO).*

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- Mr. John Hannah, *Chairman New Zealand Mussel Industry Council, Nueva Zelanda.*

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- D. Manuel Arnal Monreal, *Director de Estructuras y Zonas Dependientes de la Pesca. D.G. XIV, Unión Europea.*

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- Ms. Qi Zongxu, *China Federation of Industry and Commerce Aquatic Product, China.*

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- D. Alejandro Gaete, *Gerente General de Robinson Crusoe, Chile.*
- Mr. Marc Kielley, *Executive Director Newfounland Aquaculture Industry Association, Canadá.*

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- Mr. Leo Lucas, *Manager Mussel Office, Holanda.*
- Mr. Hendrik Verploegh, *Plant Manager Mieras B.V., Holanda.*
- Mr. Hervé Blanes, *Alcyon S.A., Francia.*

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- D. Ramón Rodríguez Rodríguez, *Presidente de FEGAME.*
- D. Manuel López Outeiral, *Paquito, S.L.*
- D. Juan M. Vieites Baptista de Sousa, *Secretario General de ANFACO.*

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- Mr. Mario Bussani, *Presidente Federazione Italiana Maricoltori.*
- Mr. Gerry O'Sullivan, *Manager European Markets Irish Sea Fisheries Board (BIM), Irlanda.*

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- Mr. W.J. Wyenberg, *Sea Harvest Co. Lted., Sudáfrica.*

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19.45 - 20.15 h. **CONCLUSIONES**

20.15 h. **CLAUSURA**
- D. Manuel Arnal Monreal, *Director de Mercados Externos, Recursos Externos y Organizaciones Internacionales en materia de Pesca y Evaluación Económica de los Acuerdos Pesqueros.* D.G. XIV, Unión Europea.
- Amancio Landín Jaráiz, *Director General de Marisquero e Acuicultura (Xunta de Galicia).*
- D. Bernardo Alfageme de Riva, *Presidente de ANFACO.*

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Ponencia
Session

1

PRODUCCIÓN, MERCADOS E INDUSTRIALIZACIÓN DEL MEJILLÓN EN EL MUNDO (VISIÓN TRANSNACIONAL)

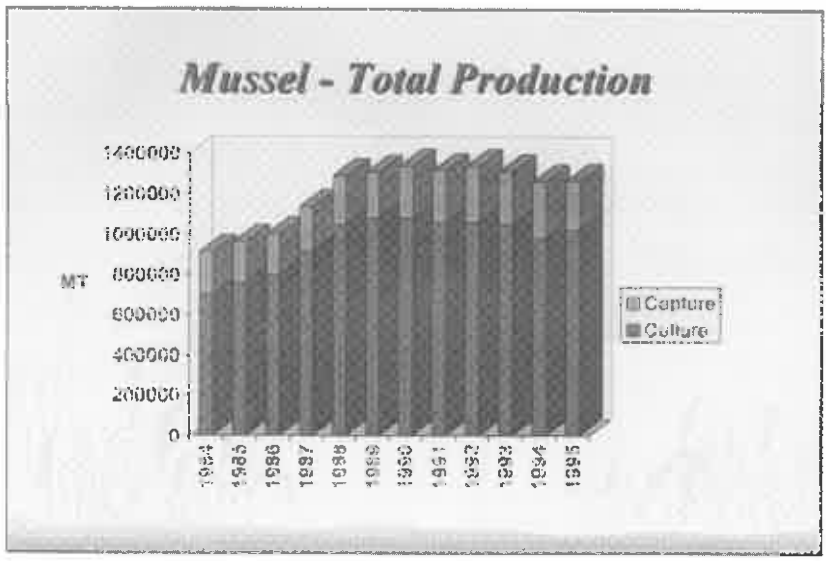
PRODUCTION, MARKETS AND INDUSTRIALIZATION OF MUSSELS IN THE WORLD (TRANSNATIONAL PERSPECTIVE)

MS. HELGA JOSUPEIT
FISHERY INDUSTRY OFFICER.
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (FAO)

MODERADOR/*CHAIRMAN:*
D. JESÚS M. ALONSO ESCURÍS

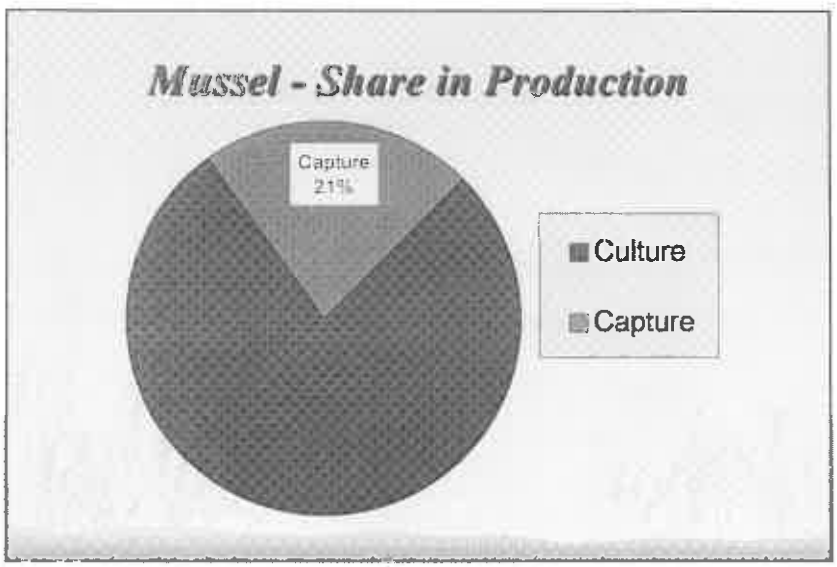
GLOBAL MUSSEL PRODUCTION AND MARKETS

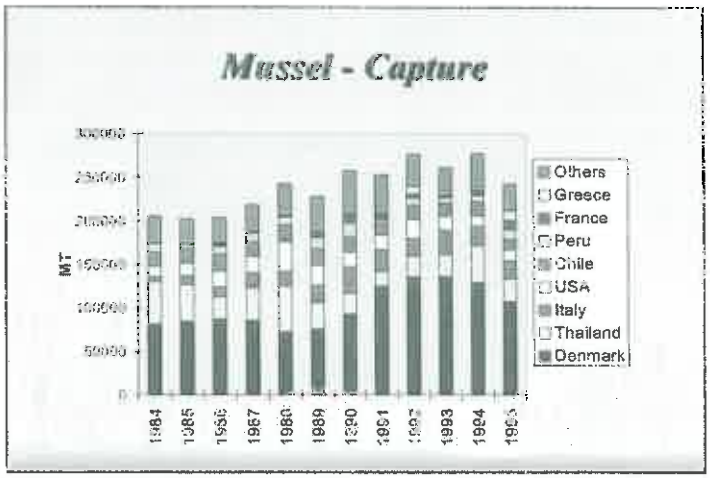
MS. HELGA JOSUPEIT
FISHERY INDUSTRY OFFICER. FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (FAO)



Unlike most other aquatic species, wild mussel production is much smaller than the cultured mussel production. In 1995, total mussel production -both capture and culture- were 1.2 million MT, up from 950.000 MT in 1985. The increase came almost entirely from an increase in culture production.

The share of mussel capture fisheries in total mussel production has declined in recent years to 21%. This decline was not so much due to an expansion in mussel culture production than to a drop in the mussel capture fisheries in recent years.

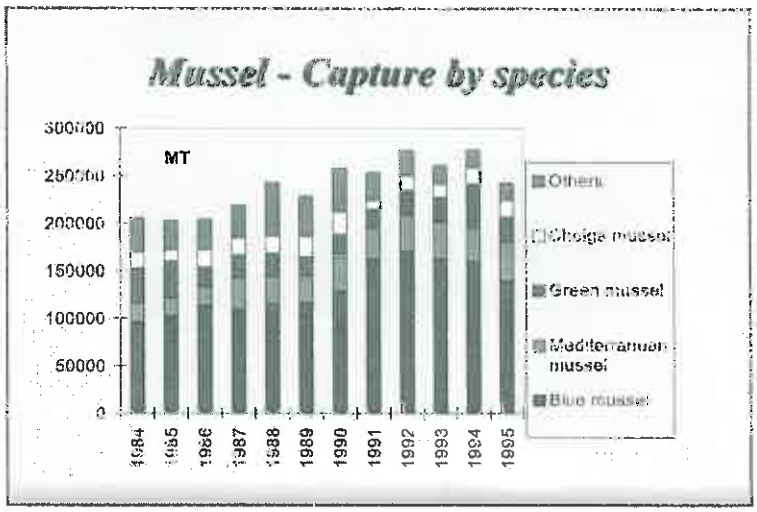




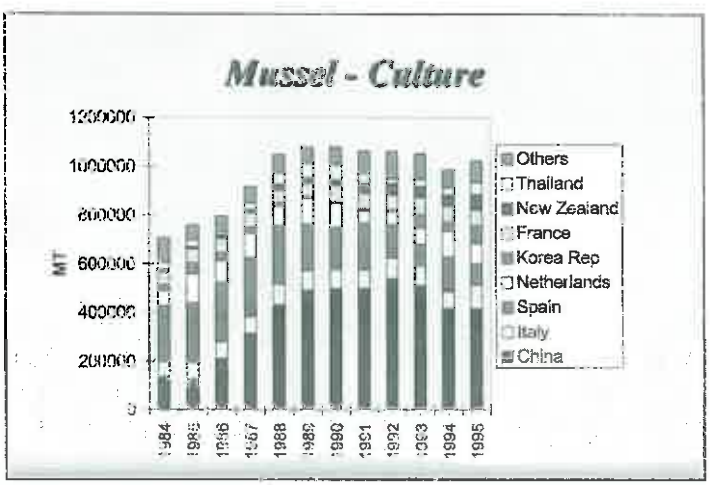
Mussel capture fisheries peaked in 1992 and 1994 at 277.000 MT. In 1995, mussel catches dropped drastically by 13%. The decline was caused by lower production in Denmark and Thailand, the two major producing countries.

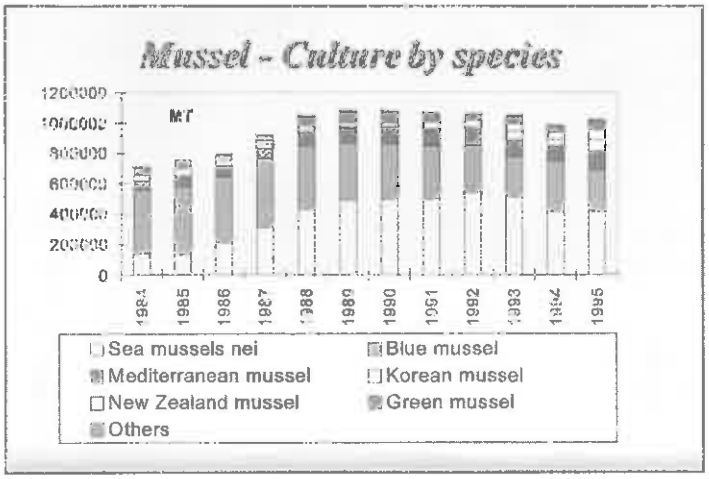
Denmark is by far the main producing country, accounting for about half of the mussel catch. In 1995, mussel catch was 107.000 MT, down from 130.000 MT reported in 1994. Thai mussel capture peaked also in 194, at 45.000 MT to go down to the normal level of 26.000 MT in 1995. Other important producers of wild mussels include Italy (20.000-30.000 MT per year), the USA (10-20.000 MT) and Chile (also 10-20.000 MT). In recent years, France and Greece increased very much their mussel catches.

The blue mussel *(Mytilus edulis)* is the main mussel taken in the wild. This species taken mainly in the North Sea, accounts for over one half of total mussel capture fisheries. The Mediterranean mussel *(M. galloprovincialis)* is the second major species taken, with an average catch of 40.000 MT. While the catch of Mediterranean mussel expanded strongly from 1985 to 1995, the one of Green mussel *(M. smaragdinus)* (not the NZ mussel) declined from 37.000 MT to 26.000 MT.

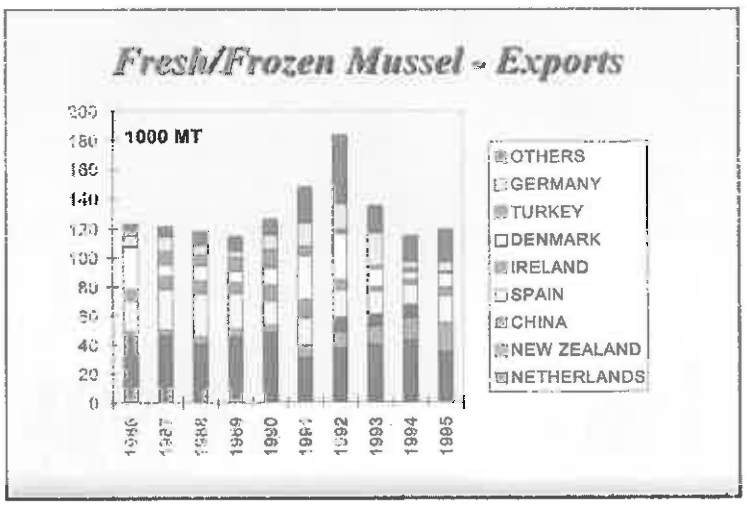


China is by far the main mussel culturing country with some 500.000 MT produced in 1991-1993. In recent years, the production by this country declined to 415.000 MT. Another important producing country of cultured mussel is Spain, the host country of this meeting. We will hear the history behind the sharp decline of Spanish production in more details later on during this meeting, so I will not go into details here. Italy managed to overtake Spain as the second major producer of cultured mussels in 1995, when the Italian production reached 95.000 MT, up from 70.000 MT in 1994. The Italian production fluctuates between 60.000 and 90.000 MT.

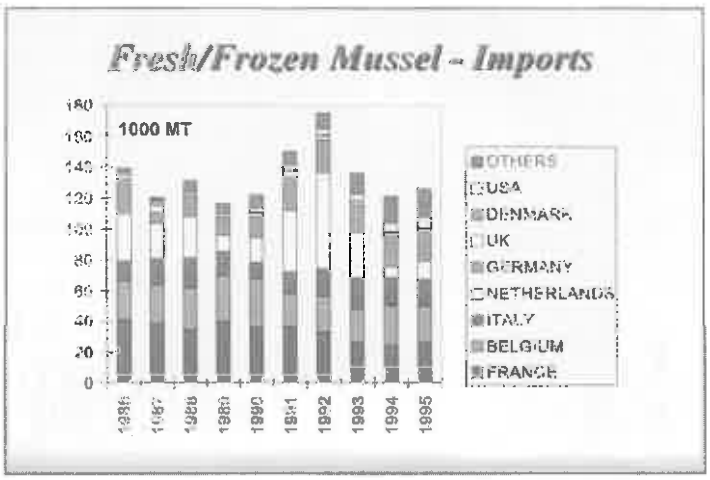




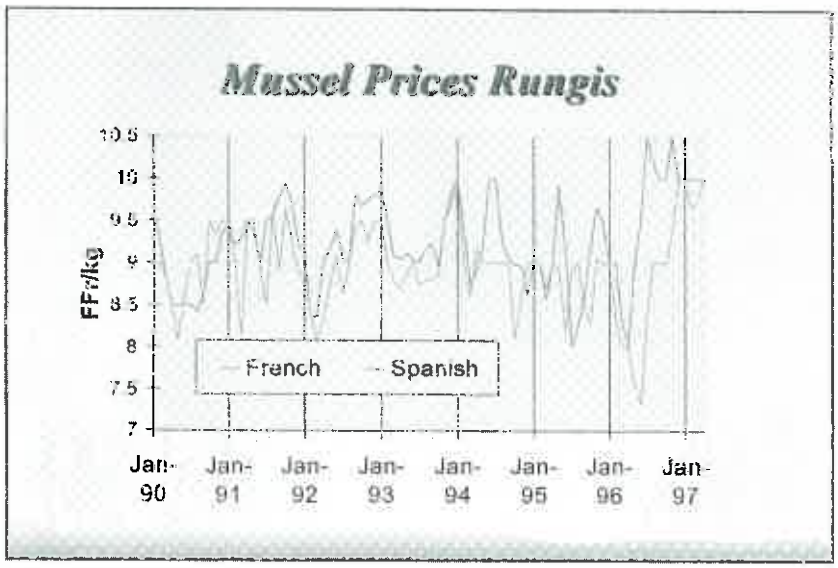
The Chinese mussel production is almost all "sea mussels nei", which explains the high share of unidentified species among the total mussel aquaculture production. Blue mussel and Mediterranean mussel are the top species among the identified species, the former mainly produced by Spain and the later by Italy.



The **Netherlands is** the main exporting country of fresh and frozen mussel (blue mussels), mainly going to the neighbouring contries, Germany and Belgium. In recent years, after the success of the green mussels, New Zealand has emerged as a main exporter of this species. New Zealand was extremely successful in expanding its share in European markets, through trade promotion offices and participation in trade fairs. Spain is also an important exporter, but the production crisis is reflected in lower exports in recent years.

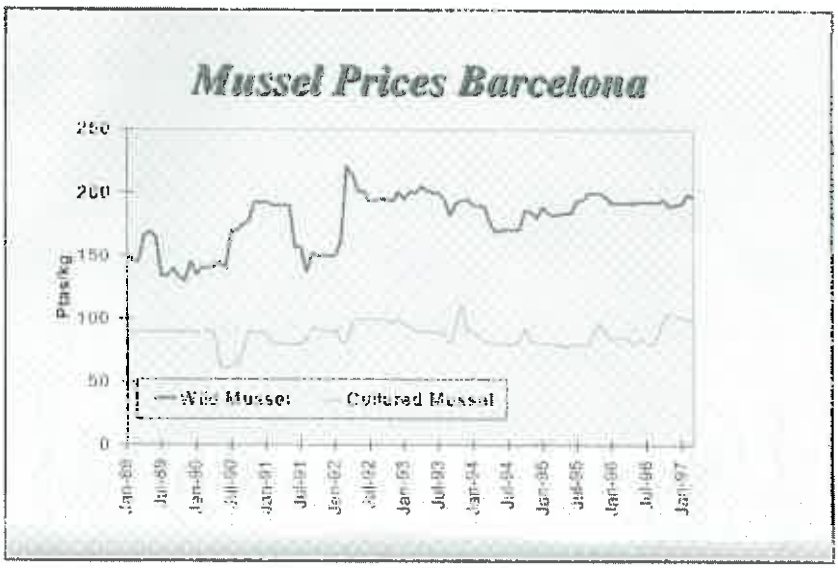


The markets for fresh and frozen mussels are almost exclusively in the European Union. France, Belgium and Germany are the main importers in quantity terms. Also the Netherlands used to import certain quantities in times of low production such as 1991 and 1992, in order to substitute for the domestic product.



Mussel prices in France generally go up in summer months, to decline again in winter. A certain trend for higher prices can be identified on the French market in recent years.

Wild mussel prices are about double the cultured mussel price. The lack in raw material has had almost no effect on the price levels in 1993 and 1995, which comes as a surprise. Mussel demand also went down as mussel were considered not safe for consumption.



Ponencia
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2

EL MEJILLÓN EN OCEANÍA: SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS DE SU CULTIVO, COMERCIALIZACIÓN E INDUSTRIALIZACIÓN EN NUEVA ZELANDA

THE MUSSEL IN OCEANIA: PRESENT SITUATION AND FUTURE PERSPECTIVES FOR CULTIVE, COMMERCIALIZATION AND INDUSTRIALIZATION IN NEW ZEALAND

MR. JOHN HANNAH
CHAIRMAN, NEW ZEALAND MUSSEL INDUSTRY COUNCIL
GENERAL MANAGER, SEALORD SHELLFISH LIMITED

MODERADOR/*CHAIRMAN:*
D. LORENZO BLANCO REFOJOS

THE MUSSELS OF OCEANIA

MR. JOHN HANNAH
CHAIRMAN, NEW ZEALAND MUSSEL INDUSTRY COUNCIL
GENERAL MANAGER, SEALORD SHELLFISH LIMITED

New Zealand accounts for 90% of commercial mussel production in Oceania. The New Zealand industry, based on *Perna canaliculus,* has grown considerably over the last 20 years. In 1996 66.000 MT of Greenshell TM Mussels were harvested only 8% is sold live, with the balance being processed. Over 90% of processed product is exported, most in frozen form. The Industry has experienced significant expansion in recent years. However future growth rates will be much lower. External factors limiting growth include the availability of suitable growing waters, sustainability and increasing environmental pressure. A further limiting factor is industry frustration with continuing lack of profitability.

OCEANIA

1.0 Introduction

Oceania is the name given to the islands of the Pacific Ocean. Oceania includes Australia, New Zealand, Melanesia, Micronesia and Polynesia. It does not include Asia. The region has a total population of 28 million people. In 1996 total commercial mussel production in Oceania was estimated at 72,000 greenweight tonnes. Of this 66.000 greenweight tonnes (91%) was produced in New Zealand and almost all the balance was grown in Australia.

■ 1.1 Species

In Oceania there are two main commercial mussel species, namely *Mytilus galloprovincialis* and *Perna canaliculus. Mytilus galloprovincialis is grown in both Australia and New Zealand, whereas Perna canaliculus* is unique to New Zealand. *Mytilus galloprovincialis* is the specie that is harvested in Australia. In New Zealand both mussel species occur and are common around most of the coastline. However only the Greenshell TM Mussel, *Perna canaliculus*, is commercially farmed.

Perna canaliculus is similar to *Perna viridis*, which occurs in Asia.

■ 1.2 Australia

Australia is a continent with a population of 17.0 million people. While it has the largest, coastline in the world its waters are not nutrient rich and the total catch for all species is quite low.

Aquaculture in Australia is based on prawns, pearl oysters, Pacific oysters, salmon, barramundi, some mussels and other species.

Total mussel production in 1995 was estimated to be 5.000 MT. Of this half is dredged, mainly in Victoria and the balance is farmed - in Victoria, South Australia and Tasmania. The mussels are farmed on longlines. Most Australian production is sold as live product to the domestic market. Longline production is gradually increasing.

■ 1.3 New Zealand

Since the late 1980's New Zealand has had one of the most deregulated economies in the world. Subsidies of all kinds have been totally eliminated. New Zealand has a population of 3.6 million people, approximately 14.5% of whom are Maori people who occupied the country before the arrival of the Europeans in the nineteenth century.

New Zealand is an Island nation with the fifth largest exclusive economic fishing zone in the world. However, these waters are not particularly productive and the total annual catch for all fish species in 1995 was approx. 650.000 tonnes. Because of its small domestic market, New Zealand has a heavier reliance on international, trade than almost any other country. New Zealand's total export volume is less than one per cent of world-wide seafood production which means it is usually a price taker.

Most of the coastline is exposed and unsuited to aquaculture operations. Aquaculture in New Zealand is based on three main species namely Greenshell TM Mussels, Salmon and Pacific Oysters. Because the population is small domestic consumption is limited and most production needs to be exported, which means that farming operations need to be competitive in international markets if they are to succeded. The limited availability of suitable growing waters, the distance from international markets, the need to be competitive, and increasing environmental pressures are all factors that have limited and will continue to limit the development of aquaculture in New Zealand.

In recent years the New Zealand Government has recognised Treaty rights entered into in 1840 with Maori. An outcome of this is that Maori have become the biggest single participant in the New Zealand seafood industry. Some claims have yet to be resolved, including claims that may affect marine farming.

■ 1.4 Pacific Islands

There are over 10.000 islands that make up Melanesia (population approx. 5.0 million people), Micronesia (0.1 million) and Polynesia (0.8 million). There is almost no commercial harvesting of mussels.

■ 1.5 Future Development of Mussels in Oceania

Commercial production of mussels in Oceania is likely to continue to be limited to New Zealand and Australia. Production levels in these two countries are expected to increase, but the rate of

increase will be relatively small. The main limiting factors are market access, the availability of suitable growing waters environmental pressures, and profitability.

PROFILE OF NEW ZEALAND INDUSTRY

■ 2.0 Overview of New Zealand Industry

The commercial farming and processing of Greenshell TM Mussels in New Zealand began in the late 1970's but did not really begin to expand until the mid 1980's.

Table 1. Annual Mussel Harvest (MT)

Year	1977	1980	1983	1985	1989	1992	1994	1996
Marlborough	300	3.000	7.000	15.500	23.800	33.000	35.000	50.200
Coromandel	-	-	-	3.000	8.000	12.000	14.000	14.000
Other	-	-	-	-	-	1.000	1.000	2.000
TOTAL	300	3.000	7.000	18.500	45.000	45.000	50.000	66.000

Source: MIC/NZFIB

Originally Greenshell TM Mussels were both grown as a food and as the raw material for health food powder in the form of freeze dried mussel extract The latter came to a halt in 1981 when the United States Food and Drug Administration banned the sale of these products resulting in a over-supply situation. Following this setback the industry focused on developing markets for Greenshell TM Mussels as a food product. In several ways this has been very successful. As table (1) shows, total annual production has grown very considerably since farming began in the late 1970's. Since then there has been considerable development in growing, harvesting and processing technologies and in market development. Export volumes have grown every year since 1981.

Today Greenshell TM Mussels are sold in over 50 different countries. Approx. 15% of annual production is sold on the local market, while the balance is sold to a wide range of export markets. The five biggest markets are USA, Japan, Australia, China and Korea who collectively account for 65% of all export sales.

Only 3% (by value) of product that is exported is live mussels. Over 90% of product that is exported is sold in frozen form. In 1996 the main export product forms were frozen half shell (70%), frozen meat (16%), frozen whole mussels (4%), other (7%). Other forms include smoked mussels, marinated mussels, mussel powder and canned mussels.

However for much of the last 20 years the industry has struggled to achieve satisfactory returns on the substantial capital that has been invested. The lack of profitability has been caused by production growing faster than the rate at which Industry has been able to develop these export markets. The situation has been compounded by a strengthening New Zealand currency in recent years. The stronger currency reduces the returns to industry forcing it to become more efficient. There is little benefit on the imput side as most imputs, except fuel, are sourced domestically. The situaton is further compounded by increased Government charges and other costs.

Industry profitability has been a very real issue for the last 18 moths. There is considerable frustration at all levels. It has seen some reduction in the growing effort, the impact of which has yet to be seen.

■ 2.1 Industry Structure

It is useful to think of the mussel industry as a value chain beginning with the grower moving through seeding and harvesting to processing and then selling to the importer, wholesaler, restau-

rant/retailer and final consumer. At each link of the value chain there are a number of operators. In New Zealand each link is made up of a number of private operators and/or companies. There are no monopolies or co-operatives at any stage. The operators at each stage compete with each other for water space, spat, raw material, customers, etc.

This competition encourages innovation and efficiency. This has been essential for industry members to continue to be active participants. Actual prices today are often the same or even lower than they were 10 - 15 years ago, meaning that in real terms they have significantly decreased. In this climate growers and processors have survived by becoming more efficient at what they do. They have had to do this to offset the problems of weak selling prices, a strengthening currency and increasing costs.

The challenge for the industry is to be competitive and yet co-operative. The industry generally has a high level of cohesion but from time to time there are moments of what is best described as negative competition. An example of this is undercutting each others prices on export markets.

Positive examples of co-operation include the development of export markets, biotoxin management programmes, industry research in generic scientific, technical and market subjects and the development of an Industry Environmental Policy.

Industry activity is co-ordinated through the New Zealand Mussel Industry Council (MIC). This consistis of 16 councilors made up of eight growers and wight processors. Its mission is:

"To achieve a cohesive and profitable industry which realises the potential of Greenshelf TM Mussels through sustainable management of resources, continuous imporvement and high quality standards".

The activities of MIC are funded through levies on product harvested. Current levies equate to approx. SNZ8.00/MT. The Council employs an Executive Officer and some administration staff and has several subcommittees including environmental, scientific and technical research, promotions and public relations.

FARMING

■ 3.0 Overview

In New Zealand the farming of any seafood item must take place on approved marine farm sites. The main growing areas are the Marlborough Sounds and Coromandel. Smaller growing areas include Golden Bay and Stewart Island. Most of these farms are owned by independent growers buy there is and increasing trend for sites to be owned by seafood companies who are already involved in processing and marketing of other seafood products.

■ 3.1 Mussel Spat

The majority of spat is collected in the north of New Zealand where it is found washed up on the beach attached to fine strands of drift seaweed. Tonnes of spat covered weed are transported to the mussel growing areas throughout the year. The spat is then seeded onto nursery longlines on spat farms where it is held until it reaches a suitable size for placement (reseeding) on the growing longlines. Another source of spat collection is by catching spat on spat collectors (fibrillated rope), lace in areas of known high spat settlement, which are monitored by Industry.

Industry is concerned at its reliance on natural collection over which it has little or no control. There are times when crop continuity is affected by spat shortfalls. Industry is co-operatively investigating improvements in spat collecting.

■ 3.2 Mussel Farming

A typical New Zealand farm is 3-4 hectares in area, and situated about 50 metres from the coastline. They tend to be concentrated in small embayments. Growers do not own their farms but lease the water space from the Goverment.

In New Zealand all GreenshellTM Mussels are grown on longlines. There is no wild catch or bottom farming. The first attempts farm mussels were based on Spanish raft cultivation techniques. They did not provide economic returns and met with criticism from environmentalists. the introduction of the Japanese longline system made mussel farming aesthetically acceptable and provided a low cost, efficient, easily managed unit for individual owner-operatted farms. Growers have a mixture of nursery longlines for holding spat and crop longlines which hold the reseeded spat until it reaches harvestable size.

The average crop longline is 110 metres long and has two parallel backbones anchored at both ends and connected by up to 50-70 large plastic floats. The backbones support 3.000 - 4.000 metres of crop rope. The Greenshell TM Mussel produces enough byssus to hold on to the rope without the assistance of nets or sticks.

Greenshell™ Mussels take between 15-24 months to grow to a harvestable shell size of 90 - 110 mm. This includes the collection of spat, the ongrowing of spat to 20-40 MT depending on the amount of culture rope, location, seeding density, phytoplankton abundance, etc. The average harvest is around 25 MT with a 12 - 14 month cycle from reseeding to harvest. A typical farm will contain between 7 - 10 crop lines and will produce 150 - 250 MT per annum. A new longline will cost USS10-12.000 to install. Growers receive around US$300-350 per MT.

Farming productivity has increased over the last ten years through the use of longer droppers, more appropriate seeding densities and a better understanding of the carrying capacity of the site.

■ 3.3 Water Quality

The mussel growing waters are monitored according to USFDA procedures. Because of the high quality of the growing waters Greenshell™ Mussels do not have to be depurated before they are processed and sold. Rainfall, run-off from the land and bacterial levels in our growing waters are monitored and data is available updated at 15 minute intervals to faxes on board harvesting barges. Heavy rainfall is likely to mean harvesting restrictions will apply. Both the growing waters and product are monitored at weekly intervals for the presence of toxic algae and biotoxins.

■ 3.4 Harvesting & Servicing

The majority of product that is harvested is done by independent contractors who have large vessels with specialised equipment. Harvesting techonoly has evolved as the industry has grown. Today harvesting is done by a combination of small multi purpose vessels and larger vessels. The larger harveter today is capabe of harvesting between 60 - 100 greenweight tonne per day. As the lines are harvested the product is passed through rumblers where it is separated and cleaned. This is followed by an initial grading which removes any foreign matter, any blue mussels and very large and small mussels. The mussels are then placed in bulk bags for transportation to the processing factories.

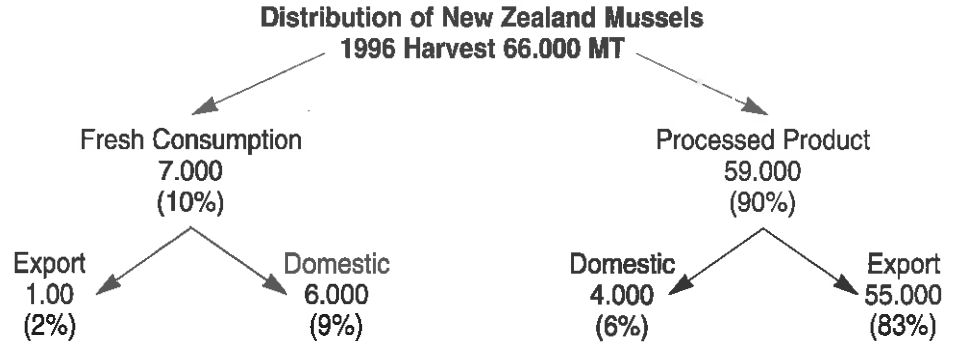
Once the crop longlines have been harvested they are cleaned and reseeded. Reseeding involves placing spat, which has already been grown to a targeted size, onto the crop longlines. This will then be ready for harvesting again in 10 - 18 months time. Growing times depend on a number of factors including location, seeding density, required size and environmental variables including food supply, water temperatures and salinity. Once the line has been reseeded it is inspected periodically to ensure there is adequate buoyancy and no mortalities or damage.

PROCESSING

■ 4.0 Overview

The harvested mussels are transported to the processing factories where they are graded and then processed into final product form. As table (2) shows 90% of harvested product is processed in some form. Only 10% is sold live. The particular process followed will depend on the product form required.

Table 2. Source. MIC/Estimate



Approx. 75% of all product harvested is frozen for sale to export markets. Other product forms include live, marinated, smoked canned, vacuum packed and freeze dried. The basic processing sequence for frozen product is a pasteurising or blanching step, followed by debyssing, opening, freezing and then packing. Most mussels are opened manually but there is some mechanical opening, using similar vibrating systems to those used in Europe. Frozen product that has been pasteurised typically has a shelf life of 12 - 15 months.

MARKETING

■ 5.0 Overview

The same companies that process the mussels also market the finished product. Each Company has its own sales team and own brand(s) and develops its own customers. Typically the processor will agree on detailed product specification with the customers. The specification describes a number of perfomance criteria including processing method, packaging, microbiological standards, biotoxin requirements, piece count, colour ratios, nutritional information, etc.

All Companies use and support the Industry trademark "Greenshell™ Mussels": This trademark can only be used for *Perna canaliculus* farmed in New Zealand. The purpose of the trademark is to protect and promote the product as coming from New Zealand, farmed is clean green growing waters of high quality, available year around.

Freight costs are a major constraint facing New Zealand exporters. Typically freight costs for frozen products constitute 12 - 20% of selling prices, depending on the market involved. The combination of freight costs and in market prices forms an effective barrier for selling live mussels to most markets.

While Companies are responsible for their own sales and marketing the Mussel Industry Council has a Promotions Committee which co-ordinates agreed generic Industry activities. These include the facilitating of increased awareness and consumption of Greenshell™ Mussels by assisting marketers through market research, agreed promotional activities and maintaining an effective programme for the trademark.

NEW ZEALAND REGULATORY REQUIREMENTS

■ 6.0 Industry Overview

The governing body is the Ministry of Agriculture & Fisheries (MAF). It audits the growing waters, harvesting procedures and processing operations through regular and frequent audits. It also works with regulatory authorities in other countries to agree on standards and where possible to obtain equivalence. New Zealand presently has equivalence with EU, Canada and Japan which means our product can enter these countries without being tested at the border.

MAF and the New Zealand Seafood Industry work together through an organisation known as New Zealand Fishing Industry Inspection and Certification Council to develop a set of standards that industry has to comply with. The standards are written to meet international regulations and to ensure product is safe and properly labelled.

Product from all the harvesting areas is regularly tested for biotoxins, heavy metals and faecal coliforms. Processed heat shocked products are tested regularly for microbiological levels including Listeria, E-Coil, faecal coliforms, standards are written to meet international regulations and to ensure product is safe an properly labelled.

Product from all the harvesting areas is regularly tested for biotoxins, heavy metals and faecal coliforms. Processed heat shocked products are tested regularly for microbiological levels including Listeria, E-Coli, faecal coliforms, salmonella and total plate counts. More extensive tests are sometimes done, depending on customer requirements.

■ 6.1 Biotoxin Management

Until the New Zealand summer of 1992/93, Industry had not experienced a biotoxin problem. New Zealand´s aquaculture industries were not prepared for the unprecedented biotoxin outbreak in the North Island. It took several weeks for the toxin groups to be identified and for a monitoring system to be implemented. During this time the entire coastline of New Zealand was closed to all shellfish gathering and harvesting as a precautionary measure. As a consequence of this experience an

enhanced national monitoring programme was established. The number of testing sites was significantly increased, especially in the commercial growing areas, and testing is done more frequently. This programme is administered jointly by Ministry of Agriculture and Public Health authorities. All sampling and testing is conducted under the supervision of Health Protection Offices in a manner approved by USFDA.

Since 1993 small amounts of four different biotoxins have been detected in shellfish around New Zealand. In all cases these toxins are only found in small areas and for limited periods of time. Generally these areas are not commercial growing areas. Since 1993 there have been no blanket closures. The enhanced programme has been extremely effective in defining any problem areas and allowing normal commercial activity to continue in other areas.

RESEARCH

■ 7.0 Scientific & Technical Research

The MIC devotes a large proportion of its revenue to research. Three years ago the Council established close linkages with research providers and actively pursued funding options for research with good success. The main focus of generic funding research has been toward risk factors such as characterising new biotoxins, developing new biotoxin assay methods, the cause of spat variations, improving the supply of mussel spat, and long term sustainability and environmental impacts of mussel farming. The Council has supported some research into technological improvements such as avoidance of mussel shell cracking, and improving raw material yields. However, most research on these opportunities is more appropriately conducted by individual companies.

■ 7.1 Sustainability

Even though production levels have expanded significantly until recently there has been little scientific evidence of any decline in productivity in our mussel farming waters. However some of the more enclosed bays with many farms are possibly producing less now than they used to. Individual farms can be overstocked by seeding the lines too densely and food is severely reduced in the middle of the farm. Mixing of water between farms appears to completely replenish food levels entering the neighbouring farm.

■ 7.2 Environmental Influence on Mussel Condition

Research carried out between 1995 and 1997 identified that a strong decline in condition in the winter of 1996 could be attributed to a simultaneous decline in phytoplankton abundance. The research pointed to most of this decline being caused by environmental effects such as lack of water column stratification and less sunlight. The impact of these was to reduce the growth rate and abundance of phytoplankton. Stocking density on the farm and water flow movements were considered to be secondary factors.

■ 7.3 Environmental Impacts of Mussel Farming

Much is known of the environmental impact of mussel farming on the sea floor directly below the farm. Most of our farms are sited over mud sediments of little conservation value. The effect on the benthic communities is very localised with no effect being detected 50m beyond the boundary of the farm. Of greater concern is that deposits from the farms can trap nutrients in the sediments and prevent them being recycled. Research is now underway into the interactions between mussels, phytoplankton and other grazers to increase our understanding of potential long term impacts on the marine community, fisheries and the sustainability of mussel farming.

Mussel farming is critisied for its detrimental effect on scenery and aesthetic value of our coastline but is recognised for providing valuable employment and revenue to rural areas with a relatively benign biological impact. In fact the requirement for clean waters in our mussel farming areas offers considerable protection to the local environment from other potentially adverse developments.

■ 7.4 Mussel Industry Environmental Policy

Industry recognises that it is a user of public space and that we need to be accountable for our use of this resource. Also, that our pollution free growing waters are one of our principal assets and that we need to ensure the continuing health of our natural environment. In recognising its relationship with the natural environment industry is committed to ensuring that all of its activities including the

collection of spat, harvesting, processing and the disposal of waste materials are managed in an environmentally responsable and sustainable manner.

Industry has demonstrated this commitment through the development and publication in February this year of its Environmental Policy which provides statements on the Industry's position with respect to the issues of sustainable management; ecological values, other resource users, cultural values; regulatory compliance; waste management; pollution; energy; and amenity values.

ISSUES AFFECTING FUTURE INDUSTRY DEVELOPMENT

■ 8.0 Overview

While the industry has experienced significant growth over the last 20 years the rate of growth in the future will be much smaller and depends on a number of factors including profitability, market access, availability of growing waters, sustainability, future innovation, and environmental issues.

■ 8.1 Profitability

Average returns achieved by industry over the last 20 years are very low, especially for the risks involved and are a source of considerable frustration. Many participants patience is being exhausted and some disinvestment is being considered. Profitability is affected by both internal and external factors. Examples of the latter include mussel production levels in other countries, competitor pricing, and exchange rates?

■ 8.2 Tenure

A further unsettling factor in the lack of certainty on tenure of the marine farms. Growers do not have permanent properly rights like land farmers. Instead they lease the water space for periods of between 14 - 20 years with no guarantee that the lease will be renewed. This situation has recently become more confused with claims by Maori over existing rights to the coast and seabed.

■ 8.3 Outlook

The New Zealand Industry has gone through the steep part of its growth curve. Even if profitability improves the combination of increasing environmental pressures and the lack of additional suitable protected growing waters will limit future production. Out current thinking is that term production levels are likely to gradually increase from 66.000 MT to around 80.000 MT.

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LA PRODUCCIÓN Y EL MERCADO DEL MEJILLÓN EN LA UNIÓN EUROPEA

PRODUCTION AND MUSSEL MARKET IN THE E.U.

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COMISIÓN EUROPEA - DIRECCIÓN GENERAL DE PESCA
DIRECTOR DE ESTRUCTURAS Y ZONAS DEPENDIENTES DE LA PESCA

MODERADOR/*CHAIRMAN:*
D. GUILLERMO ALONSO JÁUDENES

LA PRODUCCIÓN Y EL MERCADO DEL MEJILLÓN EN LA UNIÓN EUROPEA

D. MANUEL ARNAL MONREAL
COMISIÓN EUROPEA - DIRECCIÓN GENERAL DE PESCA
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Los mejillones, moluscos que pertenecen a la clase de los bivalvos, se encuentran muy extendidos en el conjunto del globo terráqueo, desde los Polos hasta las zonas tropicales. En Europa se explotan principalmente dos especies en pesquerías y en viveros:

—*Mytilus edulis* (Océano Atlántico, Mar del Norte y Mar Báltico)

—*Mytilus galloprovincialis* (Mediterráneo y Atlántico, hasta el canal de la Mancha)

La mitilicultura se ha desarrollado en la Unión Europea especialmente en los últimos 30 años, aunque en algunos lugares como en Galicia se comenzó hace más de 50 años. El aumento de la producción fue particularmente rápido hasta principios de los años 80, manteniéndose después relativamente constante, alrededor de 600.000 toneladas al año. Sin embargo, en esta estabilidad global aparente se constatan fluctuaciones anuales que pueden ser muy significativas.

La Unión Europea produce cerca del 50% de la producción mundial de mejillones. En su conjunto, la estructura de la producción se puede dividir en tres grupos distintos según las especies cultivadas y la forma de cultivo:

—Los Estados del norte de Europa (Dinamarca, Alemania, Irlanda, Países Bajos, Reino Unido, Suecia), que desarrollan casi exclusivamente la mitilicultura en cultivo fijo horizontal del Mytilus edulis, que está sustituyendo la explotación del recurso por pesquería;

—Los Estados del sur de Europa (España, Italia, y últimamente Grecia), que han desarrollado desde el siglo XIX la cría suspendida de mytilus galloprovincialis en lugares resguardados de la costa y cuya producción por pesquería es pobre comparada con la producción acuícola;

—Francia, que se encuentra en un lugar intermedio gracias a su acceso a las cuencas atlántica y mediterránea y donde toda forma de cultivo (tanto fijo como suspendido) al igual que la pesquería, contribuye a la producción.

En lo que respeta a la distribución de la producción entre los distintos Estados miembros, España ha sido tradicionalmente el principal productor desde 1993. Desde entonces, tanto Italia como Dinamarca se han unido al pelotón de cabeza. De igual forma, Francia y los Países Bajos son en la actualidad grandes productores.

El cuadro siguiente muestra la producción de los Estados miembros entre 1988 y 1995: El consumo de moluscos es muy variado entre los diferentes estados miembros de la Unión Europea.

Toneladas								
Estado miembro*	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**
Dinamarca	66.700	72.600	96.400	125.762	136.271	134.600	129.317	107. 377
Alemania	29.000	18.000	19.400	29.977	50.795	24.666	4.868	17.782
Grecia	1.100	1.500	3.800	5.898	8.391	16.700	19.074	21.650
España	243.010	193.010	173.300	195.220	138.910	90.480	142.687	92. 250
Francia	71.700	73.150	62.750	61.880	59.200	70.000	69.119	73.106
Irlanda	14.470	13.560	16.200	15.300	13.830	17.752	12.967	15.556
Italia	105.000	110.000	110.000	101.000	116.000	108.344	97.702	116.425
Países Bajos	64.000	107.000	92.000	48.740	49.250	65.981	104.952	79.281
Portugal	107	30	13	28	106	118	173	425
Reino Unido	6.940	9.035	10.680	4.826	3.880	4.211	14.365	15.335
Suecia	862	243	1.180	1.675	1.372	767	2.146	1.573
Total CE	602.889	598.128	585.723	590.306	578.005	533.619	592.370	540.760

*Austria. Bélgica, Finlandia y Luxemburgo no producen moluscos.

Los valores medios de consumo por habitante y año muestran que, en general, existe una relación directa entre producción nacional y consumo individual europeos.

El flujo de comercio comunitario de moluscos alcanza un volumen anual superior a 100 millones de Ecu. Dicho comercio es ante todo intra-comunitario, dado que los intercambios con los terceros países no llegan al 4% del volumen total de intercambios. Aunque el flujo con los países terceros sea relativamente débil, la balanza comercial de la Unión es deficitaria en términos de volumen y valor de intercambios (3.300 toneladas por 7,3 millones de Ecus en 1996).

Es necesario señalar la importancia social de la mitilicultura y el gran número de empleos que permite mantener en las zonas rurales. Esta actividad podría absorber más mano de obra proveniente de la pesca y por lo tanto representar una alternativa de empleo interesante para los pescadores que resultaran afectados por la reestructuración del sector.

Desde el punto de vista medioambiental, la mitilicultura no es una actividad contaminante en sí: el proceso de producción no engendra la liberación de sustancias nocivas. Sin embargo, la ocupación del espacio costero de toda actividad económica, como la conchilicultura, puede crear conflictos debido a la utilización de esas zonas. Ultimamente se han registrado daños producidos en la conchilicultura a las especies salvajes protegidas. Este tema ha sido objeto de una conferencia sobre "Conchilicultura y desarrollo integrado de las zonas costeras" organizada por la Comisión en noviembre de 1995 en Francia. En dicha conferencia se concluyó que no existe una incompatibilidad entre conchilicultura y protección de la naturaleza. Pueden surgir conflictos cuando la conchilicultura y otros utilizadores potenciales o reales hacen hincapié en el mismo recurso litoral, que es limitado. La expansión de la mitilicultura en el seno de la Unión Europea, como cualquier otra actividad acuícola, debería realizarse en un marco de planificación y de reglamentación integradas con el fin de evitar la degradación de los recursos. El desarrollo equilibrado de la zona costera exige unos planes zonales integrados de gestión que deberían ser preparados por las administraciones locales, regionales y nacionales, tomando en consideración la acuicultura en el mismo nivel que las demás actividades existentes o potenciales.

Es necesario acelerar la investigación para cuantificar el impacto de la acuicultura sobre el medio ambiente y la amenaza de las demás actividades sobre dicho medio donde la acuicultura se desarrolla. La Unión Europea desea contribuir a estos objetivos con su 4º programa marco de investigación.

Además la decisión de la Unión Europea de adaptar mejor sus programas de ayuda estructural a las necesidades de todos los actores de la industria y de los sectores dependientes de la pesca y de la acuicultura, ha llevado a la creación del Instrumento Financiero de Orientación Pesquero (IFOP).

Para el período 1994-1999, el IFOP ha sido dotado con 2.700 millones de Ecus para el conjunto de la Europa de los Quince. En el campo de la acuicultura, el IFOP puede cofinanciar inversiones para la construcción, ampliación y modernización de las granjas y de las instalaciones acuícolas, además de la compra de nuevos equipos. Se da una prioridad a los inversores que mejoren la calidad de sus productos, las condiciones sanitarias y de higiene, la reducción de incidencias negativas en el medio ambiente y la aplicación de nuevas tecnologías en forma de proyectos piloto.

El sector de la conchilicultura tiene, por lo tanto, la oportunidad de beneficiarse, en un conjunto que nosotros deseamos sea integrado de los medios financieros suficientes para su reestructuración allí donde se necesite, para el acondicionamiento del territorio y para la formación de los empresarios.

Y siempre en el contexto de los fondos estructurales, conviene señalar la Iniciativa Comunitaria PESCA. Se trata de una Iniciativa Comunitaria dirigida específicamente a las zonas dependientes de la pesca, que pretende preparar al mundo de la pesca para lograr su conversión y revitalizar el tejido socioeconómico de las zonas litorales.

La diferencia de PESCA con respecto al IFOP estriba en la forma de concebir y de aplicar los proyectos integrados sobre el terreno a los propios actores económicos. Esta iniciativa cuenta con un presupuesto de 292 millones de Ecus para el período 1995-1999.

La nueva dimensión adoptada por la política estructural en favor de la pesca y de la acuicultura desde su integración en el dispositivo de los Fondos Estructurales comunitarios, consagra una evolución hacia una política integrada, coherente y ampliada. Esta nueva dimensión considera el sector pesquero como un factor de fortalecimiento de la cohesión económica y social y hace de la política estructural el vector privilegiado del desarrollo de las zonas litorales.

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EL MEJILLÓN EN ASIA: SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS DE SU CULTIVO, COMERCIALIZACIÓN E INDUSTRIALIZACIÓN EN CHINA

THE MUSSEL IN ASIA: PRESENT SITUATION AND FUTURE PERSPECTIVES FOR CULTIVE, COMMERCIALIZATION AND INDUSTRIALIZATION IN CHINA

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EL MEJILLÓN EN AMÉRICA: SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS DE SU CULTIVO, COMERCIALIZACIÓN E INDUSTRIALIZACIÓN EN CHILE Y CANADÁ

THE MUSSEL IN AMERICA: PRESENT SITUATION AND FUTURE PERSPECTIVES OF CULTIVE, COMMERCIALIZATION AND INDUSTRIALIZATION IN CHILE AND CANADA

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GERENTE GENERAL DE ROBINSON CRUSOE, CHILE

MR. MARC KIELLEY
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EL MEJILLÓN EN CHILE. SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS DE SU COMERCIALIZACIÓN E INDUSTRIALIZACIÓN

D. ALEJANDRO GAETE
GERENTE GENERAL DE ROBINSON CRUSOE, CHILE

I. CARACTERÍSTICAS DEL MEJILLÓN CULTIVADO EN CHILE

■ 1. Los mitilidos presentes en Chile.

- Chorito (Mytilus Chilensis): Alcanza tamaño adulto de 5 a 5,5 cm. en estado salvaje se encuentra en la zona intermareal hasta 10 m. de profundidad.
- Cholga (Aulacomya Ater): De tamaño adulto entre 6 y 9 cm. en estado salvaje se encuentra entre 2 y 20 m. de profundidad.
- Choro (Choro Mytilus Chorus): De gran tamaño, alcanza 12 a 15 cm. su nombre vernacular es choro zapato y se distribuye entre 2 y 30 m. de profundidad. Actualmente, por sobre-explotación en años anteriores, esta especie no tiene significación económica.
- Choritos y cholgas constituyen más del 25% del consumo interno de bivalvos, siendo las especies de menor precio a público.
- Estos mitilidos están presentes en casi toda la costa chilena y se cultiva en escala industrial sólo el chorito.
- El llamado chorito es el que presenta mayor similitud de forma y color con los mitilidos europeos, y por su color es el que se asemeja más al mejillón español, aunque de menor tamaño y algo menos anaranjado.

■ 2. Características genéricas del mejillón chileno (chorito) de cultivo.

- En estado larvario demora alrededor de 4 semanas hasta su fijación como semilla. Esto ocurre a partir de Setiembre y hasta Diciembre (en Chile primavera).
- El tamaño comercial se alcanza entre 15 y 18 meses, plazo que se extiende en ocasiones hasta 24 meses para obtener tamaño premium.
- Concha ligeramente frágil para el manejo en procesamiento, aunque tiene buena resistencia a los cambios de temperatura ambiental.
- Los valores nutricionales típicos, expresados sobre 100 g. de producto en conserva indican: 13,3 g. de proteínas, 1,6 g. de lípidos, 4 g. de glúcidos, con un aporte de sólo 84 kcal. por 100 g. confirmándolo como un alimento muy sano y de gran valor nutricional.
- El rendimiento de carne varía de 20 a 22% en los meses de invierno, subiendo a 26-28% en los meses estivales.
- Los calibres de recepción, expresados en unidades de carne por kg. utilizados por la principal planta procesadora de mejillones en Chile son los siguientes: –Calibre 1: menor a 200 unidades, muy bueno para conservas. –Calibre 2: 201 a 250 unidades, aceptable para conservas. –Calibre 3: 251 a 300 unidades, para fresco y congelado. –Calibre 4: 301 a 350 unidades, tamaño poco comercial. –Calibre 5: sobre 351 unidades, rechazo en plantas de proceso.

II. EL CULTIVO DEL MEJILLÓN EN CHILE (CHORITO)

- Junto con el Ostión (Vieira), el chorito de cultivo es una de las especies con mayor antigüedad en el cultivo de moluscos, y ocupa el segundo lugar después del ostión en

volumen de cosechas, partió en forma industrial en 1950 aunque sin relevancia económica. Recién a partir de 1980 se desarrolla este cultivo, con cosechas del orden de 1.000 tm, año, volumen que se incrementa a partir de 1991 con la incorporación de nuevos cultivadores y con la transformación de algunos de ellos a un negocio industrial. Esto ha significado llegar a volúmenes de 6.000 tm. en el año 1996, estimándose 7.000 tm. en el año 1997.

- Esta cifra de 6.000 tm. de cosecha de cultivo de mejillón es aún muy poco relevante en el sector pesquero de Chile, con 7 millones de tm. de desembarque anual, de las cuales 6,7 mill. son pescados, 300 mil tom. son algas, 90 mil tm. son crustáceos y 100 mil tm. son moluscos.
- Existen alrededor de 60 centros de cultivo establecidos, la mayoría de ellos ubicados en bahías y canales protegidos del sur de Chile, entre los paralelos 41° y 43° latitud sur.
- El tamaño de estos centros es muy variable, desde 60 tm. de cosecha de 1997 se concentrará en no más de 6 centros, con tamaños desde 400 a 1200 tm. estos centros están manejados directamente por sus dueños como actividad principal. En el caso de los centros de menos de 10 tm. muchos de ellos contituyen una actividad secundaria para sus dueños.
- La semilla se obtiene de bancos naturales, existiendo en Chile tres semilleros autorizados, en los cuales pueden captar semilla los cultivadores. La capacidad instalada de recolección se estima en 150 mil colectores, captando de 10 a 12 kg. de semilla por colector, (en años normales). La captación comienza a partir de Diciembre y se mantiene hasta Junio. Además de esta fuente de semillas, se utilizan colectores situados en los propios centros. En ambos casos los colectores se fabrican con redes de desuso.
- Los cultivadores usan sistemas suspendidos, 80% son long-line y el resto balsas. Las cuelgas de cultivo más usadas son redes de 6 a 8 m. de largo, encordadas con el sistema "francés modificado" (manga de tela de algodón envolviendo a la semilla y a la cuelga de crecimiento, manga que posteriormente se disuelve). Con una densidad de 6 a 8 kg. de semilla de tamaño 2-2,5 cm. estas cuelgas producen entre 30 a 50 kg. c/u de choritos en tamaño comercial.
- En el caso de long-line, se utilizan líneas de 100 a 200 m. con 2,5 colectores por m. lineal. En el caso de las balsas, comúnmente 6 a 9 colectores por m. lineal.
- No existe restricción para el tamaño de las concesiones de cultivo. Sólo deben cumplirse los programas de actividades y volumen de cosecha entregados a las autoridades para obtener la concesión, la cual es perpetua y negociable. Se estima un promedio de 1 há. para 10 tm. de cosecha.
- Las cosechas se realizan mayoritariamente entre Marzo y Junio, con un seguno período de cosecha en Octubre y Noviembre.
- A pesar del aumento de los volumenes cosechados, este sector permanece aún con sistemas artesanales en el manejo de sus cultivos, incluyendo la cosecha, con la excepción de muy pocas empresas, que han comenzado a incorporar tecnología en su operación.
- El producto final entregado a los procesadores es en general muy variable en tamaño y con porcentaje alto de productos bajo calibre. En general no presenta contaminación alta y no se han detectado fenómenos de marea roja en las zonas de cultivo.

III. ELABORACIÓN Y COMERCIALIZACIÓN DEL CHORITO DE CULTIVO

■ 1. Estado actual de Plantas Procesadoras.

- En general las plantas procesadoras están ubicadas desde 2 hasta 5 horas de los centros de cultivo.
- Salvo la excepción de la compañía líder en Chile en la producción y comercialización de mariscos en conservas, el sector productivo no está mecanizado, ocupándose mucha mano de obra en las operaciones de desbisado, desconche y limpieza. En el caso de la compañía líder, ésta se encuentra equipada con tecnología holandesa y española de procesamiento mecanizado de mejillones.

■ 2. Comercialización del Chorito de Cultivo.

- El volumen cosechado, de aproximadamente 6.000 tm. tiene como destinos principales:

–El mercado de exportación, alrededor de 500 tm. netas, entre 30 a 40% de lo cultivos, siendo el mercado principal el argentino que demanda casi un 30% del mejillón de cultivo en estado de carne congelada iqf o bloque.
–Las industrias elaboradoras locales, en estado de materia prima con concha, que compran alrededor del 30 a 35% del volumen total, destinando gran parte de su producción en forma de conservas o congelados al mercado local.
–El resto va al mercado local como fresco, aunque en este mercado el chorito salvaje es el comercializado mayoritariamente.

- Salvo en el caso de las conservas, los precios pagados son en general bajos y corresponden al nivel de calidad medio o bajo de la producción.
- En el mercado de las conservas, muy desarrollado en Chile, y en desarrollo progresivo en Latinoamérica se presenta el mejillón en variadas preparaciones: en salmuera, en aceite, en escabeche, en salsa picante, ahumados, además integrando productos preparados como cazuela de mariscos y otros similes.
- En el mercado latinoamericano, las conservas españolas de mejillones han tenido historicamente una presencia destacada, aunque en los últimos 4 años las conservas ROBINSON CRUSOE, producidas por la empresa líder en Chile, han tomado un espacio significativo.
- La regularidad en las entregas, la ausencia de vedas, la uniformidad de los tamaños y el mejor rendimiento han posibilitado que el chorito de cultivo esté reemplazando paulatinamente el chorito salvaje, llegando a ser en 1996 el volumen cosechado de cultivo, superior a los desembarques de chorito salvaje.

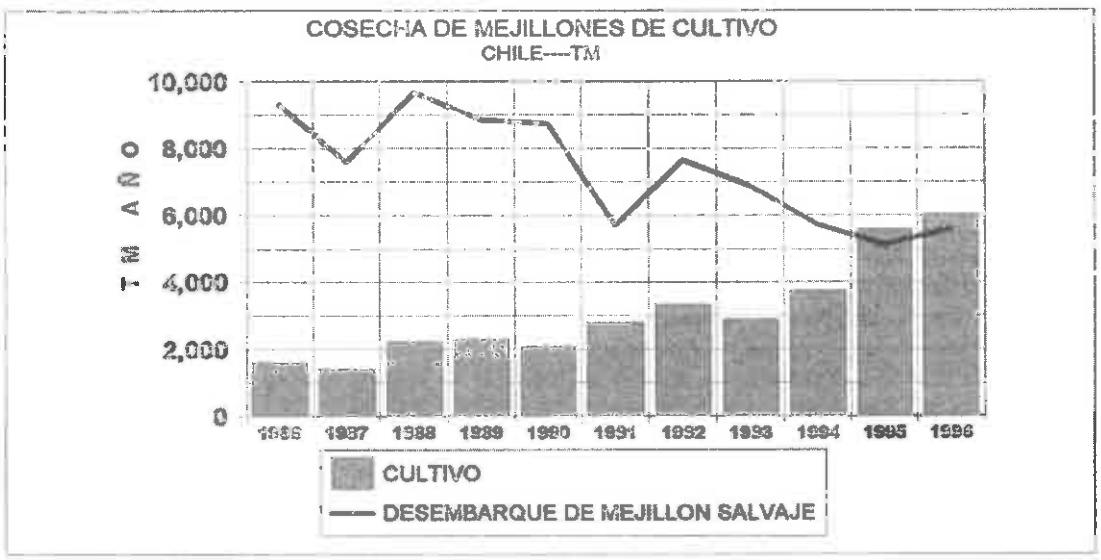
■ 3. Antecedentes Estadísticos.

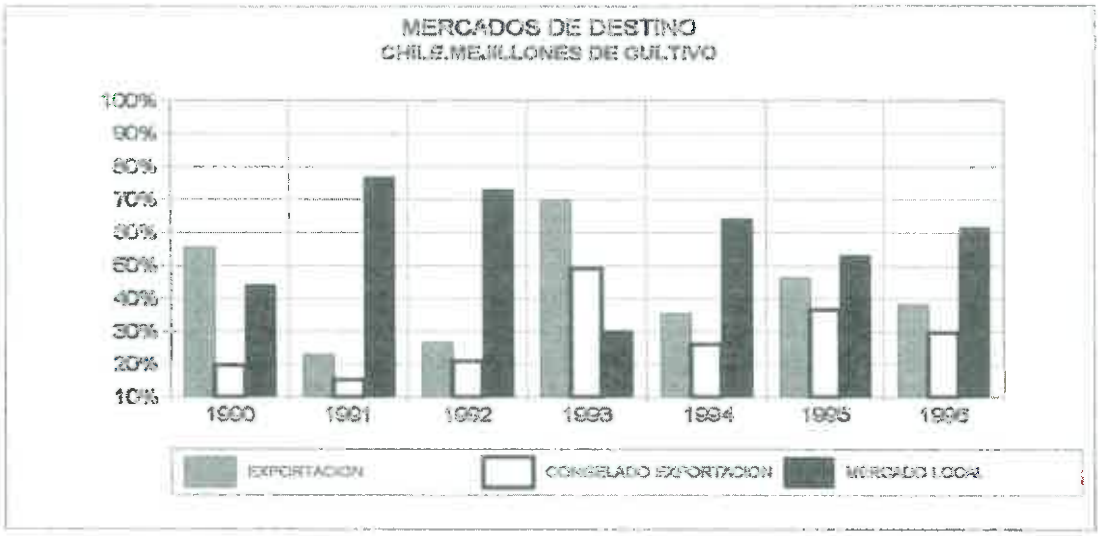
Para una adecuada identificación de la evolución del sector se acompañan los siguientes gráficos:

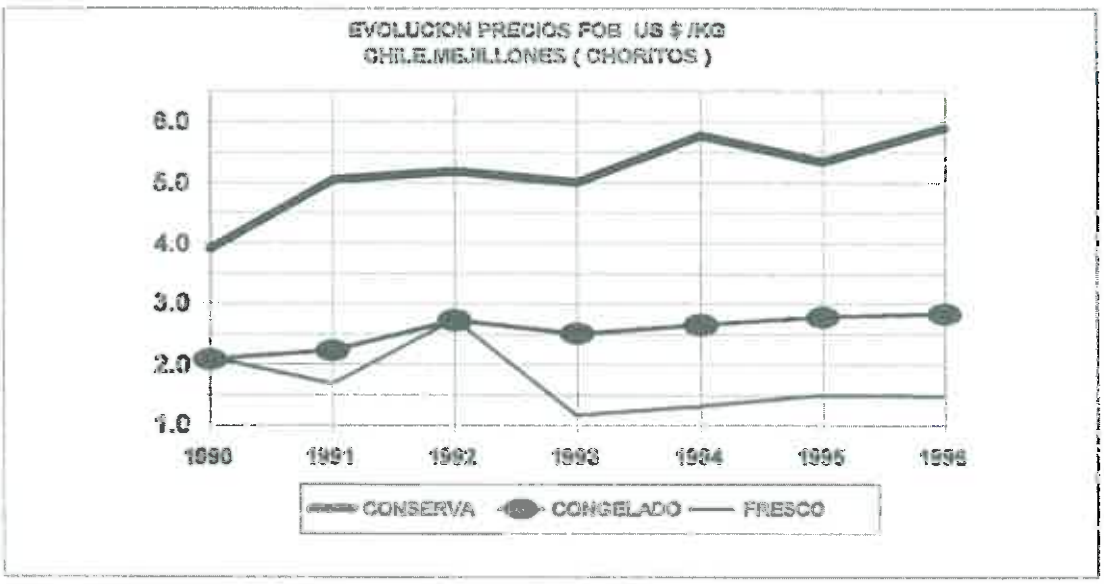
- Cosecha de mejillones de cultivo (choritos) 1986-1996
- Mercado de destino, evolucion en % 1990-1996
- Evolución de precios promedio de exportaciones 1990-1996

IV. RESUMEN Y PROYECCIONES PARA EL CULTIVO DE MEJILLONES EN CHILE

- El producto genérico de cultivo es de calidad muy aceptable para el mercado local, el mercado latinoamericano y americano, en el mercado europeo debería tener opción en los países nórdicos, por la semejanza en color con los mejillones de cultivos de los Países Bajos.
- La Miticultura en Chile está tecnológicamente muy poco desarrollada, tanto en equipamiento de cosecha como en conocimiento profundo de todas las variables que pueden afectar el rendimiento y el costo de un centro, vale decir ésta en el proceso preliminar de aprendizaje.







- Los precios obtenidos podrían considerarse bajos, sin embargo el costo final para el procesador termina siendo 20 a 25% más alto por los rechazos internos.
- La captación de semillas y el mejoramiento genético es una actividad clave para desarrollar un producto más apto para mercados exigentes.
- Los procesadores no pueden acceder a mercados exigentes, ni obtener mejores precios puesto que la materia prima recibida no lo permite cabalmente.
- Los volúmenes de cultivo podrían incrementarse fuertemente sólo si se produce previamente un incremento sustancial de la productividad de los centros y de la calidad del producto final cosechado, puesto que no se perciben restricciones importantes en la disponibilidad de áreas para concesiones, ni tampoco existe por el momento contaminación por marea roja en las zonas de cultivo.
- Tanto el mercado interno como el latinoamericano, geográficamente cercano y gradualmente casi sin barreras aduaneras constituyen en el futuro los mercados naturales de expansión para los mejillones de cultivo de Chile.
- El apoyo de marcas de reconocido prestigio y la incorporación de productos en base a mejillones, en forma de conserva, fresco o congelado, con mayor valor agregado para el consumidor deberían permitir un aumento constante del consumo, factor clave para permitir el desarrollo del cultivo de mejillones en Chile.

PRESENT SITUATION ON MUSSEL CULTURE IN CANADA

MR. MARC KIELLEY
EXECUTIVE DIRECTOR NEWFOUNDLAND AQUACULTURE INDUSTRY ASSOCIATION, CANADA

INTRODUCTION

The blue mussel Mytilus edulis is the predominant mussel species cultivated in Canada. Production of blue mussels in concentrated in the Atlantic Provinces of Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick. Mussel culture first became established in Prince Edward Island in the 1970's and this province has become the leader in mussel production in North America.

Mussel culture in Newfoundland, Nova Scotia and New Brunswick did not begin until the mid 1980's. After a long developmental period involving much trial and error, Newfoundland in particular appears poised for rapid growth.

In 1996, 8.700 metric tonnes of blue mussels were produced at a FOB plant value of $20.000.000 Canadian. (See table).

1996 Aquaculture Production and $ Value

Province	Metric tonnes	$ Value FOB plant (Canadian)
Prince Edward Island	7.469	16.431.000
Nova Scotia	502	1.104.000
Newfoundland	411	904.200
New Brunswick	180	400.000
Quebec	80	180.000
TOTAL	8.642	19.019.200

REGIONAL SUITABLLITY

While the physical geography varies in the Atlantic provinces, the environment is well snited for blue mussel culture. The shoreline topography many large, pristine, sheltered coves and inlets which provide ideal growing conditions. Most sites are located in sparsely populated areas and therefore not affected by industrial, municipal or domestic pollutants.

Most regions experience ice formation during the winter months. In Newfoundland, experience has taught us that shore fast ice is preferable to sites which have fast moving ice. Growers in warmer climates may consider ice a constraint to development however farmers in eastern Canada will tell you that shore fast ice formation provides benefits for harvesting. Shore fast ice provides a strong platform for harvesting operations so that mussels can be harvested on a year round basis. Other regions in Atlantic Canada that have fast ice have adapted to these conditions successfully by sinking lines below the ice level.

LONGLINE TECHONOLGY

Mussels produced in the Atlantic Provinces are grown entirely in suspended culture. The basic longline system consists of:

A buoyed mainline rope anchored at each end; anchor methods vary by province. In Newfoundland, anchor bolts are drilled into rock. In PEI, iron anchors (old railway tracks) are commonly used while some areas use concrete blocks. Depending on the site the mainlines may vary from 100 to 1000 meters in length. In Newfoundland, growers use 180 litre herring barrels for floatation while PEI famers use 15 to 20 litre buoys because they are easier to sink in the winter.

Seed collector ropes (typically 3/8" polyrope) which are suspended from the main lines. Lengths deployed generally range from 1.8 to 3.6 meters.

Grow-out socks (poly mesh sleeves which are filled with mussel seed) suspended from mainlines until product achieves market size.

SPAWNING CYCLE

The spawning cycle differs between provinces in the Atlantic region. PEI mussels tend to spawn first in the region, generally in May and June. In Nova Scotia spawning occurs in early June to early July. The spawning period in Newfoundland varies more widely between regions of the Province. The spawning period normally ranges from July to September. Experience has shown regions with colder water tend to spawn later.

SEED COLLECTION

Access to a reliable supply of mussel seed is essential to successful mussel farming. The key factor in the collection of seed in determining the optimum time to deploy collectors. Spatfall monitoring procedures are employed to predict spatfall and inform farmers when to deploy seed collectors. Plankton tows are used to collect water samples which are analyzed under a microscope by a grower or technician. When sufficient larvae reach 200 micrometers, growers are advised to deploy collectors.

In Newfoundland, the NAIA administers the spat monitoring program for the industry. Growers are trained to collect to plankton tows, microscope usage and record farm data. The information collected since the program started in 1992 is helping to establish baseline data on spat abundance and collection at farm sites. This information is beneficial to farmers in determining the best areas within their leases for collection and if the sites can supply sufficient spat for individual farmers. The program has proved a catalyst for industry development and provides an important source of revenue for the industry association.

Presently, most farmers in Newfoundland collect seed from their lease. Those farmers which do not produce sufficient seed purchase from farms which have a surplus of seed. In Newfoundland studies are underway to examine the feasibility of establishing seed supply farms and to determine if it is more economical to purchase versus collect seed. In the rest of Atlantic Canada seed farms already exist.

A 3/8" rope is the most commonly used collector material. Length of collector rope varies by farmer depending upon post record of performance in seed collection. Rope length varies from 1.8 to 3.6 meters, depending on the farm site. Collectors are weighted with a small rock or lead weight for stability.

A main concern for growers is to avoid collection of Mytilus trossulos because of its inferior growth characteristics.

SOCKING OF MUSSEL SEED

Following the seed collection period, mussels are stripped from the collector ropes; declumped; and graded to ensure that mussels socked are of a similar size and reach market size at the same time.

Size of the sock mesh used depends on the seed size; 10 to 20mm mesh is commonly used. Seed size of 15 to 20 mm is generally preferred.

Socking tables ares employed to facilitate the transfer of seed into the sock mesh. The same basic technique is used by all farmers. Graded mussels are placed in a tank or holding area; sock is sleeved over a plastic pipe and the mussels are fed through the pipe into the sock using a flow of seawater.

Sock length used again varies by farmer depending upon record of perfomance using various lengths. In PEI growers some growers are using socks (reinforced with twine) up to 4.5 to 5 meters in length.

Seed density when socking is a critical issue in mussel farming because it impacts on the length of grow out period; uniformity of grow out and hece farm economies. In the past many farmers overstocked their socks resulting in poor production. Across Atlantic Canada farmers sock on average 600 to 700 mussels per meter per sock for optimum grow out.

HOLDING SYSTEMS

Mussels are at their peak during the winter months and most are harvested between November and May.

One of the challenges of harvesting during winter months is accessing the farm sit during ice formation in early winter and ice break up in the spring. The PEI industry pioneered the use of holding systems which are used to store large quantities of product to maintain continuity of supply at times when harvesting is not possible due to ice or inclement weather. The holding systems consist of gray fish boxes which are fed wih a continuos flow of water. Mussels require massive amounts of oxygen so oxygen flow is regulated to satisfy oxygen requirements. Product quality is also improved because mussels stored in the holding systems purge themselves of any mud or silt.

WATER AND PRODUCT QUALITY TESTING

In Canada, all commercial shellfish farms must meet the federal Department of Environment's standards for water quality. Each approved site must pass tests for fecal coliform to obtain approvals. Each site is re-tested according to protocols to ensure the water quality standard is being maintained.

All product destined for export is processed in federally inspected plants by the Department of Fisheries and Oceans. All plants are federally tested to ensure the product is safe and hygienic for human consumption. Random lots from each production shipment are sent to government laboratories for analysis. The test involve analysis for known toxins e.g. PSP, DSP and domoic acid. Moreover, all farmed product sold is from approved growing waters indicating with labels indicating date of harvest, are of harvest etc.

FUTURE PROJECTIONS

Projections are for continued growth of the mussel culture industry in Canada particularly in the Atlantic region. Over the next 5-10 years it is expected production will grow from 8.000 to 25.000 metric tonnes. Production growth will come in two forms: 1) improved farm management practices resulting in increased farm yields per hectare and 2) further development of the abundant coastline available for mussel culture in Nova Scotia and Newfoundland. Spatially it appears that most sites in PEI are under culture and production from this province will continue to increase but at a slower rate.

Almost all mussel production in Atlantic Canada is exported in the whole fresh form because it is highly profitable. Future growth will also be predicated on strategic market development, promotions and new product development. To achieve greater market penetration and consumption more value added products will have to be developed.

Ponencia
Session

6

EL MEJILLÓN EN LA UNIÓN EUROPEA (1): SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS DE SU CULTIVO, COMERCIALIZACIÓN E INDUSTRIALIZACIÓN EN HOLANDA Y FRANCIA

THE MUSSEL IN THE E.U.'S (1): PRESENT SITUATION AND FUTURE PERSPECTIVES FOR CULTIVE, COMMERCIALIZATION AND INDUSTRIALIZATION IN HOLLAND AND FRANCE

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ALCYON, S.A., FRANCIA

MODERADOR/*CHAIRMAN:*
D. ENRIQUE ALBO DURO

MUSSELINDUSTRY IN THE NETHERLAND "A DUTCH EXPERIENCE"

MR. LEO LUCAS
MANAGER OF THE MUSSELDEPARTMENT OF THE DUTCH FISH BOARD

Leo Lucas was born in Rotterdam in 1983. After finishiing high school he started his career in an inland and Rhine shipping company in his place of birth. While working he went to evening schools and studied business administration and economics. In 1982, after 25 years at the same company he left for becoming the manager of the Musseldepartment of the Dutch Fish Board, which organisation also manages the musselauctioon at Yerseke.

INTRODUCTION

I am very pleased that your organisers invited me to give a speech on the history, development and organisation of the Dutch mussel-industry.

In an area, as the southern Delta of Rhine, Meuse and Scheldt in the Netherlands, which is rich of fish and game, the original inhabitants specialized in hunting and fishing. As you know, without doubt, shellfish have lived for centuries in the coastal waters of our countries. Before the province of Zeeland took on the form in which we know it now, there was already a shellfish culture of sorts. I have heard it said that the Romans were so enamoured of Zeeland-oysters, that they had the delicacy specially shipped to Rome.

As far back as the 18th century fishermen were sowing mussels in breedings beds, and going back later to harvest them. As fishing was free, they had to make sure that no else tried to harvest their mussels. Originally the mussels were sold only in places, which could be reached by ship, but the advent of the railroads made possible a considerable expansion. In fact, Dutch mussels even found their way to the fish market of. This was the situation until about 1870, when the sea arm between South Beveland and North Brabant was closed, in order to accomodate the rail line between Holland and Zeeland. The Dutch government began too withdraw certain sections of the coastal waters and sea arms from free fishing and lease them to musselfarmers. At the same time, the authorities kept a close eye on these areas, to ensure that the musselfarmers were able to harvest what they had sown.

From these modest beginnings, the cultivation of mussels has blossomed into an industry that is good for some 100 million kg of mussels every year. The average value of this quantity is about 100 milliion Dutch guilders, which equals about 40 million ECU. As this is the value of the raw material the consumption value can be estimated on 200 to 250 million Dutch guilders (80 to 100 million ECU).

However it was not until the 50-ties that the Dutch realised that the waters of Zeeland harboured one of the largest areas of musselculture in the world. This realisation was forced upon them by the appearance of a mussel-parasite which had entered the country from elsewhere. This parasite caused a great deal of damage and seriously endangered the culture of mussels in Zeeland.

An other disaster, which was prominently featured in the papers all over the world, took place during a stormy night in February of 1953, when the southwest of the Netherlands was flooded, causing great loss of life. It was not the flood itself which had such a disastrous effect on the mussel-culture, buth rather the measures which were taken to prevent a recurrence.

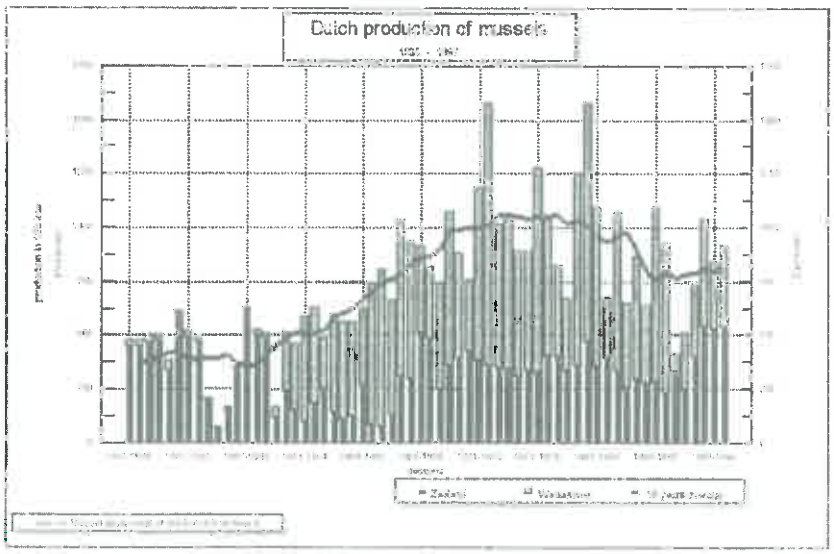
These measures, collectively known as the Delta Works, would have meant the end of mussel-cultivation. in Zeeland at any rate. However, when the mussel-parasite reared its ugly head, the government took action, setting aside special areas in the Wadden Sea for the culture of mussels. And even more plots came available when a number of seas-armas in Zeeland were closed off, as part of the Delta Works and within a few years production could be doubled.

In the Netherlands mussel farming mainly practised by musselgrowers from the southern province of Zeeland. Is has a very long tradition. Already during more than 150 years mussels are cultivated in the intertidal waters of Zeeland. After the great flood in 1953, when large areas in South-western part of our country where flooded and many people were killed, the Goverment decided to close the whole southern Delta, which practically meant the end of shellfish farming in this part of our country.

However in 1976, the shellfish-industry and the ecological organisations were standing shoulder to shoulder and under the pressure of economic arguments by the mussel – and oyster farmers and ecological arguments of environmental organisations, the Government decided to cancel the closing of the Eastern Scheldt by a dike and changed it into the building of a storm – surge barrier. This barrier is now effective and realised the maintenence of shellfish farming in Zeeland. Nevertheless a number of sea-arms were closed and the culture lots were abandoned and exchanged for lots in the Wadden Sea. Today musselproduction in the Netherlands is realised on approx. 4.000 ha in the Waddensea and 1.500 ha in the Eastern Scheldt.

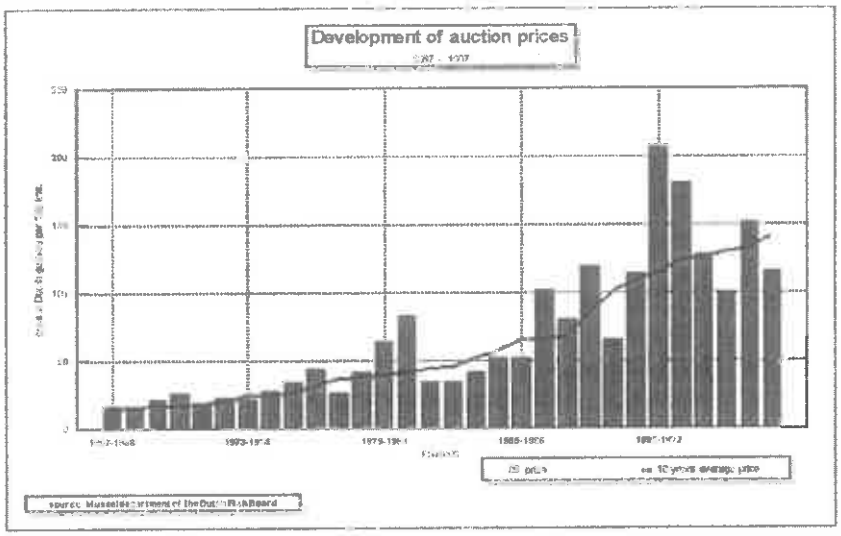
The sustainability of the Dutch musselculture lies not only in its constantly good quality but also in the continuity of supply. In order to satisfy all their customers, mussel dealers must be able to rely on a steady supply by the musselbreeders, regardless of tides and weather condicions. They have at their disposal enormoous storage facilities in the neighbourhood of Yerseke. These 'wet warehouses' can accomodate some 10 million kilograms of mussels. Depending on prevailing conditions, source and demand, their stay in these special conditioning beds lasts anywhere between 1 and 3 weeks.

All transactions between musselbreeders and musseldealers are handled at the Yerseke-musse-lauction, by the Mussel section of the Dutch Fish Board. Musselfarmers are organised in regional fishery organisations. Beside that 90% of them are also a member of the Mussel Producers Organisation, which was founded in 1987 under the conditions of EEC Regulation. Our PO plays a key role in the organisation of the market for mussels and in managing the production areas of musselseed, to which I shall come later. They have comitted themselves to market all their mussels through the auction and must meet minimum quality standards laid down each year. Sales are by tender. An excellent commercial organization provides for continuity of supply.



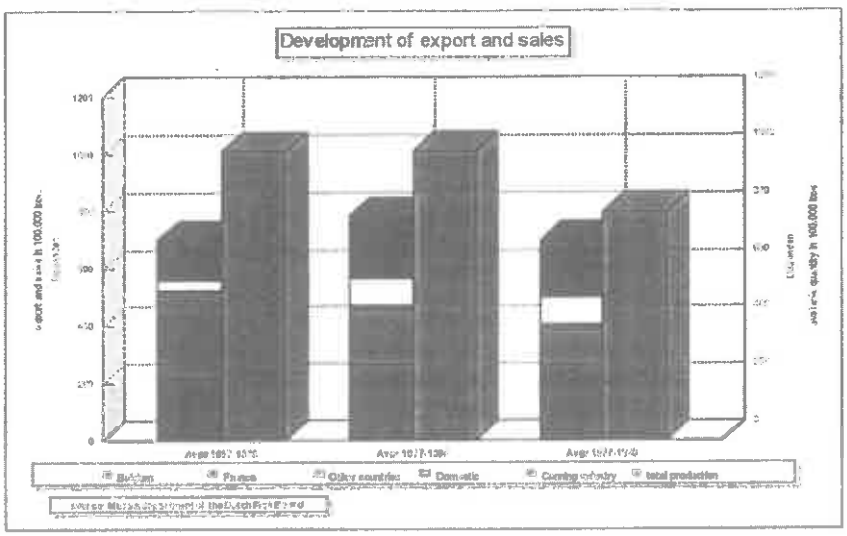
Graph 1. Dutch mussel production.

The historical development of Dutch mussel culture can best illustrated by means of a few statistics and graphics. The first chart (graph 1) shows the total production since the Musseloffice was founded in 1935. We see here a general rise up untill the middle of the eighties. The dips are caused by a variety of factors. There was a serious drop in production during the 2nd World War. The absolute low was recorded in 1945, when production reached barely 7.5 million kos. The surprisingly rapid recovery which followed led to a high of 63 million kos in the 1948 season, a production record which stood until 1961. The second blow, which was caused by the mussel parasite came in 1950.



Graph 2. Development of auction prices.

It is also interesting to note that the rise becomes more pronounced after 1967. This is due in part to various natural factors. But there is also an other reason. Up until 1967 fishermen were dependent on orders from dealers. This meant that no sales could be mede until an order had been placed with the Musseloffice. With the introduction of the new system, these restrictions were lifted and musselfarmers were free to supply any quality mussels, to any customer, in any quantity desired. Instead of the fixed prices of the past, dealers had to bid on the available loads. The disadvantage of the new system was that in some seasons overproduction became a problem. The musselfarmers reached an agreement among themselves and the so-called musselfund was launched. For each ton of mussels sold, a fixed sum was deposited in the fund and that money eas used to guarantee them a fixed minimum price during periods of overproduction. Although runned by the Producers Organisation the fund is still in existance today. Due to the decline in production it has not been needed in recent years.



Graph 3. Development of exports and sales.

Naturally all these developments had an effect on the value of the total catch and on the average musselprice (graph 2). From the 1961/62 season on, both show marked annual increases as a result of the lifting of market restrictions. Previously prices had been fixed at the beginning of each season. Now buyers fix the price themselves by bidding on the

various loads, governed only by the current minimum price. It is not hard to see that in times of scarcity the auction price could skyrocket.

Let us turn now to export and sales figures (graph 3). There have been a number of interesting developments in this field. In order to create a good survey I have taken the consecutive averages of the season 1967 to 1977, 1977 to 1987 and 1987 to 1997. One thing is perfectly clear, the total sales are going up and down together with the production figures. The production of the 1967/1977 season is on the same level as production during the seasons 1977/1987 whereas the production of the las ten years is lagging behind. Of course, one cannot sell more then one produces and besides that I have already mentioned the possibility of intervention in the market, which was arrangek by the farmers themselves.

The most important differences in the 3 survey periods are the following. Belgian consumers are very faithful and loyal partners. Their share increased from 30% to over 37%. In volume it means that their consumption rose from 20 million to 25 million kilos.

Export to France have disappeared for a considerable part. Over the 1st period the Dutch exportd more than 45% of their mussels to France. In the last 10 years there remains only some 18%, which means that the quantity dropped from 32 million kilos ton only 12,5 million kilos. Export to other, mainly surrounding, countries such as Germany and Great Britain, are practically negligible; although an increase from less than 1% to 2,25% has been realised, which means only 1,5 million kilos.

In general, these figures mean that the Dutch producers are less dependent on export of their mussels. The total export has dropped from 77% to about 60%. Forunately this decrease was compensated by an increase of domestic consumption. The Dutch are increasingly appreciating their own product, due to, among others, intensive information, good public relations, advertising and education. The Dutch consumption tripled from 4% during the 1st survey period to 12,5% during the 3rd, which means a volume of 8,6 million kilos.

Moreover, in recent decades more mussels have been processed in the canning industry. They are very innovative in the development of more varieties. In the past, people only knew mussels in vinegar.

Today you can find all kind of musselproducts in supermarkets and retailshops. Besides that, for these kind of products, the whole world is your market, whereas for fresh mussels you are dependent on distance and time.

One thing is clear from all these statistics, The Netherlands is lagging behind in a field where is has always played a major role. A number of factors play a role here.

In the first place, the production of seed mussels has declined to a precarious level. In the spring of 1987 a gigantic quantity of seed mussels were produced and during 1988 and 1989 a large proportion of these were planted out in the breeding beds. There was such quantities available that the 1989 decline of spat was not seen as a problem. The beds themselves were the very picture of health and there was even enough to see producers through the 1989/90 and 1990/91 seasons.

Nor was there any great concern when in January and February of 1990 stock were decimated by a number of storms and the young mussels in the free beds were also found to have disappeared. The new batch of spat in the summerr of 1990 would no doubt put things right again. However in 1990 and 1991 no spat-quantity of any importance was found in the Waddensea and when large numbers of eider ducks in the Waddensea began devouring the mussels in the breedin beds, musselfarmers started to worry. Of course eider ducks had always wintered on the Wadden Islands, enjoying their share of the available mussels. But now there seemed to be so many more than other years.

Until 1991 mussel-farmers received twice a year, in spring and in autumn, a license for mussel-seed fishing from the Ministry of Agriculture, Nature Management and Fisheries. They were licensed to catch as much mussel-seed as they were able to fish 2 to 3 days a week during a period of 4 to 6 weeks. These periods of seed-fishing were exiting and it often happened that too many mussel-

cutters were fishing on an very small bed of mussel-breed. It was hard work to get your share of the mussel breed and to secure the future. Quarrels occured when dredges were entangled and had to be unraveled. In years of excessive quantities of mussel breed the farmers over-seeded there culture lots, so that a normal growth of the breed was hardly impossible or was washed away during the first storm.

MUSSEL-SEED FISHING PLANS

In autumn 1991 mussel stock in the Wadden Sea reached their lowest level. It was reported in the news papers that eider-ducks and other birds were dying of starvation. Mussel-farmers were accused of premature exhaustion and vadalism. It was in that period that the 6th trilateral Ministers Conference on the Protection of the Wadden Sea decided to close considerable parts of the Wadden Sea for mussel-seed-fishing.

Musselfishermen were put under strong pressure to take management measures in order to avoid too rigid measures from the government's side. They realised that they were walking on a dead end and decided to place seed-fishing under certain regulations. During the autumn fishery of 1.991 the amount of musselseed that would be fished was voluntarily restricted to 38.000 metric tons. A survey of the mussel stocks by biologists of the Netherlands Institute for Fishery Investigation had indicated that approximately 58.000 metric tons were available 20.000 tons were reserved for the birds.

In spring 1992 the government obliged the mussel-sector to reserve again 20.000 tons for the birds on a total of 28.000 tons.

The reservation of mussels were made by setting a total allowable catch (TAC) and laying down individual quota in a fishing plan, which was carried out under the reponsability of the professional organisations. Initially individual quotas were based on the landings (=production) over the seasons 1968/69 until 1990/91. Today production over the seasons 1968/69 until 1994/95 is decisive for distribution.

In 1993 the Dutch government presented the Policy Document on Sea and Coastal Fisheries. This documents sets the direction for the national fisheries policy during the 1990s. The new policy is aimed to achieve a balance between fishing activities and nature values, where possible, and a separation of these two where necessary.

To harmonise fishery and nature in the areas open to shellfish fishery the industry itself was asked to draw up a management plan. In 1994 this management plan was adopted by the PO Mussels. At the same time the reponsability for fishing plans was taken over from the regional organisations.

Enforcement of rules laid down in the fishing plans was easier for the PO for several reasons:

1. The PO offers several facilities which are profitable for the mussel-farmers.
2. PO regulations, laid down in the General Assembly are binding for all members.
3. The PO is the competent organisation in taking measures to ensure the proper management of catch quotas. The authority of the PO to set rules for the management of mussel-seed fishery cannot easily be questioned.

Beside this management plan, the General Assembly of the Producers Organisation passed, after two years of discussion, the Regulations Musselseed fishery. These regulations contain the same commitments as the fishing plan.

Agreements were made on

—individual quota
I already stated before that the individual quota are based on production-figures over the seasons 1968/69 until 1994/95.

—period of seed-fishing
Basically seed fishing takes place in spring and autumn. The PO board negociate with the Ministry about the duration of seed-fishing.

—closing of additional areas
In addition to the areas which are closed by the Government (26% of the Wadden Sea) and recorded in the Management Plan the PO-board can suggest to close further areas in order to reserve for next periods of seed-fishing.

—obligations of participants
The members have the obligation of measuring the quantities they catch, in order to check the individual share.

As from the seed-fishing coming springtime the vessels of all participants must have installed a 'blackbox'. This little computer registers the movements of the vessel and can be consulted afterwards. It enables the PO-board to establish possible offenses.

—supervision during the seed-fishing
Empioyees of the Commodity Board for Fish supervise in the area and measure the catches.

—Measures in case of offense against regulations
The PO-board can condemn any offender to pay a fine, which varies from 30 Dutch guilder per ton overcatch, to 150.000 Dutch guilders for not measuring the catch, or 50.000 Dutch guilders for fishing in a closed area.

CONCLUSION

As I already stated, these measures were taken under tremendous pressure by the public opinion which was strongly supported by the environmentalists opinion that nature had to be protected and especially the birds and seals in the Wadden Sea. And as you will probably know, environmental people have the tendency to exaggerate.

Musselbreeders fully understand their responsability towards nature and together with the ecological groups they are lookin for balance between musselseed-fishing and nature, with the recognition of their historic rights. Once a year the fishing plans are evaluated and where neccesary adjusted or explained.

It took the mussel-growers some time to get used to limitation of their freedom. Manyu years the only restriction was laid in the fact that only twice a year mussel-seed fishing was possible. Today all kind of restriction are made as you have noticed.

However they are getting used to these measures and realize that although not everybody is happy with his individual share. he can fish his quantity peacefully, without the pressure of catching as much as possible. The catches of mussel-seed are cleaner than in years before, so that he can seed more 'mussels' than all kinds of iniquities on his lots. Together with the more stable lots which were laid out earlier this year by the Goverment the future of mussel-farming in harmonisation with nature is a positive perspective.

THE DUTCH MUSSEL INDUSTRY ACTUAL SITUATION AND FUTURE

MR. H.L. VERPLOEGH
PLANT MANAGER MIERAS B.V., HOLANDA

As general manager of the Dutch mussel-preserve factory Mieras b.v., I am very glad for the invitation to give at this Mussel-conference an update of the Dutch and North European musselindustry.

One of the major mussel producing countries are the Netherlands. They keep this situation for more than a century. In 1870 the first mussel lays were granted by Royal appointment. Since the Dutch musselfarmers have sailed our waters. As the farming of mussels is originally an activity of the south west part of the Netherlands, called Zeeland, also nowadays the epic centre of the Dutch musselfarming is stil the Zeeland village of Yerseke.

Unlike the musselcultivation in Spain, the Dutch musselculture is a ground-culture in stead of a rope-culture. This means that the mussel grows at the sandy bottom of the shallow inland seas of the Eastern Scheldt and Waddenzee.

As already stated, the Dutch musselcultivation started some hundredtwenty years ago. The musselcultivation started as an experiment to achieve a better quality product than the wild caught mussels and to guarantee a stable supply over the years.

The chronicals of this period stated that the experment was very successfull as annual quantities increased year by year.

Apart from increased quantities, also the quality of the product improved largely. The wild mussel being often very uneven in size and of a relatively low meat-content is replaced by a more equal sized mussel, with an optimal fish content, because the growing conditions could be optimised.

In 1950 the Dutch musselindustry suffered a major set-back as the Eastern-Scheldt became infected with the mussel parasite (Mytiloca intestinalis). This parasite was responsable for the death of most musselstocks in the Eastern Scheldt. In an attempt to keep the mussel cultivation going the government issued several Orders in the Waddenzee. Meanwhile the lays in the Eastern Scheld were kept empty so that the parasite eventually would disappear.

The newly issued production grounds in the Waddenzee proved to be very successful and became a welcome structural extension to the total cultivation area after the Eastern Scheldt lays restarted producing again. In the period 1965-1985 production doubled to around 100.000 tonnes of fresh mussels.

After that the production decreased significantly because of poorer spratfalls and increased predation by birds. Since 1995 the total quantity of mussels passed through the Dutch exportes and industry increased again. This in mainly due to imports from musselgrowers in the German part of the Waddenzee and some imports from Denmark.

Also some minor imports from other countries such as England and Ireland were realised.

- On the next sheet I will show you the most important flows of mussels as they were in 1994.

Over the last decade the Dutch authorities have tried to give musselcultivation a new steady basis. This was needed because musselproduction eroded from some 100.000 tonnes to around 70.000 tonnes. The main goal was to achieve an annual production level of about 100.000 tonnes of mussels again. What measures were taken to achieve this? As musselproduction has everything to do with the availability of musselseed and the survival of this seed, so that it can grow to a size mussel fit for consumption, an analysis of the reasons of the decline in the past few years was made.

The main reasons highlighted were:

- Alternations in the currents and movements of sand and mud flats both in the Eastern Scheldt and the Waddenzee.
- Preditation by birds such as eider ducks, starfish and crabs.
- Natural loss because of storms and icebeds.
- A part from these more or less natural causes, the government also had to take into account the changing attitude of the Dutch population towards matters as fishery and natural values, such as birds and room for natural development of nature in the Waddenzee and Eastern Scheldt.

To serve both needs, the Dutch government issued in 1993 a "Structure nota".

This nota resulted in a more regulated seed-fishing of mussels. This regulation ment that only keepers of a mussel lay could fish a certain quota of mussel seed. People only owning dredgers could no longer take part in the seed-fishing. Also the areas where it is allowed to fish the mussel seed were restricted. Stable tidal flats are left exclusively for the birds, or natural development, where unstable tidal flats still can be fished as this seed will stand little change of reaching maturity.

Another side of the plan was to reallocate a part of the musselbeds, so that the lays in question have an optimised, more stable production capacity. To achieve this some 1.100 acres of new prime mussel lays are allocated to the growers and some 1.400 acres of non-productive grounds are taken out. This operation has been effected before the start of the 1995 musselseason. Since production-levels increased again to some 85.000 tonnes.

At this moment there are in the Waddenzee some 7.800 acres os mussel lays and about 4.200 acres in the Eastern Scheldt, giving a total of 12.000 acres of good musselgrounds.

After the completion of the semi-permeable waterbarrier in the Eastern Scheldt in 1990, tidal currents were reduced and average quantity of mussels grown in the Eastern Scheldt increased.

Apart from the developments in the musselgrowing areas, also the way the mussel is handled has been subject to major changes during the past decades.

The handling of mussels prior to the packaging ashore can be split into two stages:

- The fishing by the mussel grower.
- The fishing by the musselindustry, or wholesaler.

First the boats owned by the musselgrowers. As mussels have to be transported in a minimal time from the North to the South of Holland. The boats of the growers have developed into large very fast boats. Most boats are equipped with two sheltered holds of about 50 tons of live mussels. Holds need to be sheltered because the black shell absorbs in summertine a lot of heat, which may cause a loss of the valuable product. The lastest generation of musselfishing boats is equipped with a washing hold where all mussels are washed prior to putting them in the transport hold. Because of this pre-washing less waste material has to be transported and mussels suffer less stress because the nets do not need to be dipped in the water prior to emptying.

Dimensions of an average Dutch musselboat are about 38 to 41 metres long and some 8 to 10 metres wide. Boat speeds of about 13 knots are not exceptional any more.

The reason of the above mentioned North-South transport is that all mussel industry is centred in the South of Holland and that all mussels have to be landed at the mussel-auction in Yerseke.

Because the industry has to bid for every load of mussels and no contracts with musselgrowers can be made, prices of Dutch fresh mussels are known to be one of the best in Europe. Of course also the quality of the Dutch mussel is appreciated largely by a big group of consumers in Belgium, Holland, France and Germany. Because of these good price-levels the Dutch musselgrowers are in a position to innovate in their vessels to achieve an even better quality. At present the Dutch musselfleet is the most modern fleet of vessels in the world. (The average musselboat is younger than 10 years).

The boats owned by the industry and wholesalers are different from the big ships of the growers as they only have to land the quantity needed for the days production.

Here ease of handling and stress-reduction are key words. Therefore more and more companies have boats capable to wash the mussels on board and to put them then directly in containers, so that no extra manipulation is needed. On shore mussels are purified in those containers for some 24 hours to get rid of last traces of sand and put the mussels at rest after the stress of the fishing.

As in Holland the musselindustry is a very active and lively sector, undoubtably many further developments are still at hand.

Besides the technical developments, there are also a number of threads for a sound development. Here below I want to highlight some of these uncertainties of the future.

NATIONALLY IN HOLLAND

- In 1997 there will be a governmental evaluation of the effects of the structure nota of 1993. If this evaluation points out that there are still not enough guarantees for natural development, further measures in respect to seed-fishing discipline and available mussel lays can follow. Of course these developments will have a negative influence to the possible quantity of mussels grown.
- Coming year there will be another trilateral ministers conference about the future of the Waddenzee. Policies defined in this conference can also effect the Dutch mussel culture.
- At this moment the Dutch musselculture is at its maximum. This will result in a continuing development of concentration of companies. This is the case as well at the mussel growers as with the industry.

INTERNATIONALLY

General

- A further internationalisation of the major companies involved in this business. In order to become less dependent from national fluctuations in catches the major Dutch musselcompanies look abroad to establish a wider base for their raw materials. This will result in a decreasing importance of Holland as a growing area. Especially if more restrictions are at hand.
- What will be the future developments regarding European licences for the cultivation of Mollusc.

Denmark

The major fishing areas in Denmark are the Danish Waddenzee and the Limfjord. Both are Nature areas.

As in Holland the musselfishery in Denmark is a ground fishery. Mussels are fished with similar dredges as in Holland, only as the mussels do not need to be transported over long distances and the fished quantities are subjected to quota, the boats are significantly smaller.

Organisation of the musselfishery in Denmark:

A committee of 5 "independents" has been formed. These people have to present a proposal of how many mussels can be fished per area.

The fishermen try to stress the need of co-management of the musselbeds. In this respect issues as number of licences, opening and closing of the season, fishing-pressure and appointing areas for replantation of juvenile mussels are in question.

LIMFJORD:

Originally there are 84 licences for the Limfjord.
Both on natural and economical grounds there is a policy to reduce the number of licences. This reduction of licences is partly financed with E.C. money.
At this moment a reduction from 84 to 51 licences has been effectuated. A possible further reduction to 35 licences can be expected.
Under pressure of Environmental protection fishermen have agreed some restrictions in fishing areas.
Also there is a quota pro ship. This has been reduced from 110 to 85 tons a week. 30% may be smaller than 40 mm after fishing and grading. This will be 10% under 45 mm in future.

WADDENZEE:

6 licences, 5 ships.
Annually a quota is set. This varies the last years between 5.000 and 8.000 tonnes.
The major part of the Waddenzee is closed for musselfishing, in the remainder only consumption size mussels may be fished.
It is expected that this system will not change in the coming years.

Germany
The German musselcultivation area is the German Waddenzee in Sleeswijk Holstein and Nieder Sachsen.
Almost the complete German Waddenzee is a protected Natural Area. From "Area 1" (+- 50%) musselculture will be banned in fazes. Outside "Area 1" musselculture is still possible, although here as well there are some plans for fishery-free areas.

SLEESWIJK HOLSTEIN:

There are 8 licences for musselfarming. These licences are issued for a period of 10 years. Musselseed may only be fished in the deep waters.
In total there is at the moment an area of 2.800 acres. This will be reduced between now and 2.006 to 2.000 acres.
Until now there is a practice of the transport of small half grown mussels to Holland, where they are complementary to the Dutch mussel seed catches. The German government wants to end this practice, based on arguments of natural values.

NIEDER SACHSEN:

In Nieder Sachsen there are 4 musselgrowing companies, with a total surface of 1.300 acres of lays. Like in Sleeswijk Holstein the pressure from the "Nationalpark" to reduce the musselgrowing is equally big.

The major difference between Nieder Sachsen is that here it is still allowed to fish about 70% of the high quality seed from the dry sandbanks.

Like in Holland, also in Nieder Sachsen the large amount of eider ducks cause major damage to the musselbeds. It is not allowed to scarce the birds away.

Rest of Europe

A further structural growth of the European musselculture seems only to be possible in the UK and Ireland.

The mussel is a very popular species of mollusc, growing almost everywhere in the world. Latest European regulations are prohibiting the import of molluscs from most of the third countries. Reason for this policy is that most third countries fail to have an approved monitoring system regarding DSP and PSP. If such an approved system will be in place in some of these countries, this can result in a big additional source of mussels. It needs no explanation that this largely will influence the actual market situation of mussels.

CONCLUSION:

Mussels are more and more appreciated by the European consumer. This results in an ever rising demand for this product. But on the other hand mussel growing and fishing is in the whole northern part of Europe more and more restricted. These restrictions are mostly not a result of changes in physical production capacity, but the result of a changing attitude towards natural values. In my opinion we have not yet come to an end of this process. As imports from third countries are at present banned as well, my conclusion is that in the near future the musselindustry will be faced with a demand which can not be followed at present price-levels. One of the most propable developments therefore will be a price-rize of mussels in the years to come.

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Ponencia
Session

7

EL MEJILLÓN EN ESPAÑA: SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS DE LA ACUICULTURA, MERCADO EN FRESCO Y TRANSFORMACIÓN

THE MUSSEL IN SPAIN: PRESENT SITUATION AND FUTURE PERSPECTIVES FOR AQUACULTURE, FRESH MARKETS AND TRANSFORMATION

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EL MEJILLÓN EN ESPAÑA: SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS. MERCADO EN FRESCO Y TRANSFORMACIÓN

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La producción española de mejillón se localiza en las rías gallegas y en la costa mediterránea (delta del Ebro y bahía de Valencia). Debido a la poca entidad de la producción mediterránea y al consumo en su práctica totalidad por el mercado en fresco de las propias zonas costeras, centraremos el análisis en el mejillón gallego.

Desde la óptica de la producción podemos afirmar que estamos viviendo una situación de auge del cultivo, después de un período de crisis aguda. Los últimos cinco años han supuesto la desmembración de la organización de productores, que aglutinaba al ochenta por ciento del sector, en infinidad de pequeñas asociaciones de mejilloneros. Alguna de las cuales apenas tiene 10 parques de cultivo. La concentración de producción y oferta de cultivo en una sola entidad, permitía mantener una estabilidad en los precios y en las calidades del molusco, y por tanto se obtenía una razonable rentabilidad económica en las explotaciones. Los problemas surgidos por los procesos de "mareas rojas" que han padecido las distintas rías, en algunas con especial virulencia, tuvieron efectos devastadores en el mercado, provocando auténticos "cuellos de botella", situaciones en las que en períodos cortos de tiempo se ofertaban cantidades ingentes de mejillón que el mercado era incapaz de asumir. Como consecuencia de ello, y ante la falta de soluciones imaginativas de todos los sectores implicados (productor, transformador-comercializador y administración pública), se produjo una caída del precio del molusco hasta niveles que han hecho peligrar la continuidad del cultivo. La capacidad de resistencia de las economías familiares de los mejilloneros, les han permitido salvar esta difícil situación.

La falta de procesos tóxicos de "mareas rojas" en el año 1996 y 1997, la unidad de acción y de toma de decisiones del sector productor, así como la puesta en marcha del "consello regulador do producto galego de calidade mexillón de Galicia"; han generado una situación de estabilidad permitiendo establecer precios en primera venta que han devuelto la rentabilidad económica necesaria, para recuperar la confianza perdida, y emprender nuevos proyectos de inversión y modernización de las explotaciones.

Nos encontramos en un momento crucial que debemos aprovechar las partes involucradas para consolidar y relanzar el cultivo. Tenemos que abrir un diálogo fluido que fructifique en nuevas iniciativas para el sector. La denominación "producto Galego de Calidade" debe ser un factor de unión entre las depuradoras y centros de expedición con los productores, que posibiliten la búsqueda de nuevos canales de comercialización y la conquista de segmentos de mercado novedosos. Igual planteamiento es atribuible a la industria transformadora, que el amparo de la denominación de calidad pueda desarrollar productos de calidad y alto valor añadido. Todo ello sustentado en un plan de promoción publicitaria con permanencia en el tiempo, ayudaría a la consolidación de la "cultura culinaria del mejillón", convirtiéndole en elemento esencial de la dieta alimenticia.

Por último, demandar de la administración el esfuerzo necesario para, en colaboración con el sector extractivo, abrir líneas de investigación que posibiliten un control eficaz y eficiente de las mareas rojas, para minimizar el impacto negativo que conllevan.

EL MEJILLÓN EN ESPAÑA: SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS. MERCADO EN FRESCO Y TRANSFORMACIÓN

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I) INTRODUCCIÓN

El cultivo del mejillón surge en Galicia en la segunda mitad de siglo, en un contexto político-social bien diferente al actual.

Hoy son del orden de 3.300 los artefactos flotantes que conforman la realidad de un sector a todas luces importante para nuestro país, desde el punto de vista económico y social, pero que atraviesa, en estos momentos, una de sus peores crisis.

Únicamente una re-visión histórica, que contemple todos los aspectos vinculados al mundo del mejillón, sin omisión alguna, puede permitirnos analizar aquellos factores que, a mi entender, podrían ser decisivos a la hora de perfilar la situación actual del sector. En este sentido, serían aspectos a tener en cuenta, entre otros, los siguientes:

—La globalización del mercado y la producción.
—El monocultivo familiar: un hecho claramente diferencial.
—La calidad del producto.
—La ley de la oferta y la demanda.
—La "tercera generación" de productores.
—El mercado del fresco versus transformación.
—El asociacionismo en la producción y comercialización.
—Las mareas rojas.
—La degradación de las aguas.

Es mi intención, pues, pasar a desarrollar estos aspectos, sin esquivar la crítica, por constructiva, y tratando de ofrecer soluciones potencialmente reales y factibles, que supongan una salida de futuro, a un problema de presente.

II) EL SECTOR EXTRACTIVO Y EL MERCADO EN FRESCO

El monocultivo familiar, en el caso del mejillón, supone un hecho evidentemente diferencial, con respecto a los demás países productores. La penuria económica que atravesaba la España de posguerra, se veía incrementada en Galicia hasta límites tan extremos, que desembocó en movimientos migratorios que llenaron de gallegos el mundo entero. Las condiciones de trabajo de aquellos que se quedaron y montaron las primeras bateas, eran ciertamente difíciles. Las gamelas, las pesadas cuerdas izadas a mano, el reparque en las playas; el mundo del "bateeiro" fue, desde sus inicios, duro y esforzado.

A lo largo de 50 años, surgieron miles de familias con dedicación exclusiva a la batea y al mejillón. En aguas menos contaminadas que las que tenemos hoy, y con un claro afán competitivo, el

producto resultante alcanzó tal espectacularidad en cuanto a niveles de calidad, que se creó un mercado nacional e internacional en fresco, que absorbía toda la producción generada año tras año. En un período de tiempo relativamente corto, el mejillón se convirtió en una fuente de riqueza insustituible para Galicia, a la vez que las rentas de los productores fueron subiendo hasta alcanzar niveles de bienestar, ciertamente impensables hacía sólo unos años.

A finales de los años 80, sin embargo, comienza el declive imparable de la pérdida del mercado del fresco. De nada sirvieron las campañas promocionales por parte del sector y de las instituciones, cada vez había menos mejillón gallego en nuestros mercados tradicionales y, lo que es peor, cada vez tenía un precio menor, con lo que las rentas de los productores se vieron seriamente mermadas hasta alcanzar situaciones desesperantes.

La degradación de las aguas, la pérdida de competitividad por parte de las nuevas generaciones de productores merced a una equivocada interpretación del asociacionismo, las políticas monopolistas, la incidencia de las mareas rojas. Todo ello ha desembocado en una degenerativa pérdida de la CALIDAD TRADICIONAL del producto que, a la postre, supuso que los mercados buscaran nuevas fuentes, prescindiendo cada vez más del mejillón gallego. Las causas son opinables, incluso ampliables, la constatación de los hechos es palmaria y evidente.

En consecuencia, la situación actual del sector acuicultor no es buena. Los actuales productores, nietos de aquellos pioneros, no han podido o no han sabido canalizar sus esfuerzos para, competitivamente, ofertar al mercado cosechas de alto valor cualitativo.

La mecanización del sector y la modernización de la flota se llevaron a cabo sin tener en cuenta, en muchos casos, las ratios de rentabilidad y explotación, lo que llevó a desembolsos cuantiosos que desembocaron en situaciones extremas (es el típico caso de barcos de 40 millones para explotar una o dos bateas y que la mayor parte del año dormitan amarrados a los muelles).

El intento monopolista del sector extractor, fue nefasto. Contribuyó, de forma palmaria, a inundar los mercados de producto de escasa calidad, ejerciendo una política de imposición de precios y defensa de cupos. Las presiones, imposiciones y castigos, fueron las armas utilizadas por las diferentes directivas. El cliente se convirtió en adversario, degenerándose las relaciones hasta límites insospechados.

La aventura centralizadora comercial de los años 70, había sido ya una clara advertencia, por su rotundo fracaso, de los efectos dañinos que los monopolios podían infligir a todo el sector.

Las asociaciones que se transformaron en comercializadores por medio de sus propias plantas de depuración, contribuyeron definitivamente al hundimiento del mercado en fresco, compitiendo deslealmente con sus clientes tradicionales entrando en una dinámica de precios a la baja, en imprudente desafío a los principios comerciales más elementales.

Si a todo este panorama añadimos la incidencia de las persistentes mareas rojas y la degradación de las aguas, podemos entender cuáles fueron las causas de la pérdida de calidad del mejillón gallego, la pérdida de sus mercados tradicionales y cuáles pueden ser las posibles vías de solución.

Considero fundamental la pérdida del mercado en fresco, como detonante de la difícil situación actual, de ahí mi insistencia. Recordemos que se trataba de un mercado sencillo por su linealidad y que reportaba unos grandes beneficios económicos para la totalidad del sector. Sus directrices se basaban en un producto de altísima calidad y gran rendimiento, precios moderados pero consolidados, mercados fieles, escasa morosidad y tiempos reducidos de cobranza.

III) EL SECTOR TRANSFORMADOR

El mejillón destinado a las plantas conserveras y cocedores, ha ido en un progresivo aumento directamente proporcional a la decadencia del fresco. Las diferencias entre los dos tipos de mercado

son de tal magnitud, que en su desconocimiento podemos encontrar alguna de las pistas que nos lleven a comprender la conflictividad y problemática del sector de la actualidad.

El factor diferencial fundamental, a mi entender, es el ámbito restringido del mercado en fresco, frente a la globalización del industrial. Difícilmente mejillón producido fuera de Europa tiene acceso a nuestros mercados centrales de fresco. Por la contra, la oferta de mejillón congelado o en conserva procede de los lugares más remotos e impensables hace solo unos años. En otras palabras, la oferta es mucho más amplia en el mercado de transformación.

El mercado del mejillón por excelencia es Europa. Esta cercanía, que en el caso del fresco nos beneficia definitivamente, de nada nos sirve con el industrial. China, Sudáfrica, Canadá, Corea, Nueva Zelanda o Turquía compiten con nuestro mejillón en un mercado abierto, donde poco cuentan las denominaciones de origen cuando lo que marca la pauta es el precio y la disponibilidad.

Naturalmente, cuanto mayor es la competencia, los precios son más aquilatados, con lo que desembocamos en un mercado menos atractivo para el sector, desde el punto de vista económico. Lógicamente, esto está repercutiendo negativamente sobre las economías de los productores, en primer lugar, y sobre los márgenes de los transformadores. Sin embargo, en un mercado libre, donde impera la ley de la oferta y la demanda, donde la competencia potencial es desbordante, de nada sirve descargar las iras sobre el sector transformador, que no es más que una pieza del engranaje.

IV) CONCLUSIONES

1.—El paso de un mercado dominado por el fresco, a otro dominado por el industrial, ha significado una cuantiosísima pérdida para todo el sector mejillonero de Galicia.
2.—Las causas de esta decadencia se pueden resumir en una: pérdida de CALIDAD del producto (cuyas razones he intentado desarrollar en apartados anteriores).
3.—Nos encontramos con una situación actual problemática, caracterizada por la merma de poder adquisitivo de los productores, la inestabilidad de los mercados y la conflictividad del sector.
4.—A mi entender, el futuro de esta actividad pasa por la recuperación del mercado nacional e internacional de fresco, mediante el suministro de un producto altamente prestigiado y de calidad contrastada.
   Esto no supondría la desaparición del mercado de industria. Afortunadamente Galicia tiene una capacidad de producción capaz de abastecer ambos mercados. Se trata de definir y delimitar que tipo de producto hay que enviar a cada uno de estos mercados.
5.—Se debe continuar con la política actual de detección de toxinas que tanto prestigio sanitario genera, aunque lógicamente, debe apuntarse hacia la búsqueda de nuevos sistemas que avancen en rapidez y seguridad.
6.—Aún reconociendo los enormes esfuerzos y recursos destinados al saneamiento integral de nuestras rías, entiendo que debe apuntarse, al mismo tiempo, hacia una recuperación de los fondos marinos dañados como consecuencia del cultivo de nuestros moluscos. Conseguiríamos, de esta manera, una regeneración progresiva de las aguas y de los fondos que repercutiría, sin ningún género de dudas, en un aumento de la productividad y calidad de nuestros productos derivados de la pesca y acuicultura.
   Debe apuntarse hacia la creación de silos y empresas destinadas a la transformación de conchas y residuos, en abonos y harinas. Conseguiríamos no sólo crear puestos de trabajo y abundar en la generación de riqueza, sino también dar salida a residuos industriales que, en la actualidad, están degradando el medio.
7.—Cualquier intento monopolizador, por parte de los productores o de los comercializadores, además de suponer una palmaria violación de la ley, sería un continuo foco de conflictividad que, a la postre, daría al traste con cualquier intento serio de solventar los problemas del sector.
8.—Algunos datos y casos prácticos a tener en cuenta:

ITALIA: Es productora y consumidora. Importa mejillón español desde hace 50 años. Compran nuestro producto cuando el que ellos producen se agota o no reune condiciones de mercado.

HOLANDA: Es productora y comercializadora. Abastece los mercados de fresco centroeuropeos con una cosecha altamente apreciada por su calidad y prestigio. Suministra mejillón congelado a todo el mercado mundial, con producto que previamente compra a terceros países: Dinamarca, Alemania, Irlanda, China, etc. El mercado de fresco es abastecido, únicamente, por producto autóctono de calidad.

FRANCIA: Es, fundamentalmente, consumidora. Se sirve de mejillón fresco de toda Europa. El predomino del mejillón español ha ido paulatinamente en declive. El incipiente mercado de industria de finales de los 70, desapareció en un solo año debido a las subidas continuas del producto en origen, siendo sustituido, de forma inmediata, por mejillón danés y coreano, circunstancia que dura hasta la actualidad.

En definitiva, he intentado dar una visión autocrítica de una situación actual, ciertamente problemática, desde la perspectiva que puede dar la experiencia que tenemos como productores, transformadores y comercializadores, procurando, al mismo tiempo, apuntar vías de solución que respondan a criterios reales.

EL MEJILLÓN EN ESPAÑA: SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS. MERCADO EN FRESCO Y TRANSFORMACIÓN

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RESUMEN

El mejillón representa para Galicia (España) el producto marino más importante procedente de la acuicultura, concentrando prácticamente la totalidad de la producción nacional, siendo el segundo productor mundial de este molusco y el primero europeo. También, es una de las materias primas más importantes para la industria conservera de pescados y mariscos.

El sector productor, que en la actualidad está formado por 3.356 bateas (parques de cultivo), genera un empleo directo de aproximadamente 13.000 personas y un valor en primera venta entre 10 y 12.000 millones de pesetas.

El sector conservero de mejillón produjo en 1.996, 11.580 Tm., con un valor de 9.256 millones de pesetas. Su fabricación fue aproximadamente del 100% en la región de Galicia y en 45 empresas que generaron un empleo directo de aproximadamente 9.000 personas.

Las exportaciones españolas de mejillón en el año 1.996 fueron de 19.399 Tm. en volumen de mejillones vivos, frescos o refrigerados, 2.773 Tm. de mejillones congelados y 1.046 Tm. en conserva; suponiendo el 75% de las dos partidas iniciales procedentes de Galicia y más del 89% en el caso de las conservas.

En cuanto a las importaciones en España, en el año 1.996 se efectuaron 2.903 Tm. de mejillones vivos, frescos o refrigerados 1.200 Tm. de mejillones congelados y 644 Tm. en conservas; suponiendo el 0,34% de importación por Galicia para el caso de mejillones vivos, frescos o refrigerados, 35% para los congelados y del 4% para el caso de las conservas.

I) INTRODUCCIÓN

Podemos decir sin temor a exageraciones que el sector conservero representa uno de los motores de la sociedad en Galicia (España), que cuenta con unas condiciones, capacidad productiva, medios humanos, variedad de productos y preparaciones y calidad, entre otras, así como "Know-how" para transformar y comercializar muy importante.

El mejillón representa para Galicia el producto marino más importante procedente de la acuicultura, así como uno de los productos más importantes para la industria conservera y cocederos de moluscos.

Para que, el MEJILLÓN tanto su cultivo como su transformación, tenga su mejor destino, deberá estudiarse de manera continua aspectos tan importantes como el abastecimiento y desenvolvimiento del mercado actual y futuro, características, problemáticas y ventajas competitivas, situación

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actual y necesidades de I+D, control y verificación; calidad, innovación y transferencia de tecnología en el cultivo y transformación industrial del mejillón.

Las crecientes necesidades de materias primas para la industria, seguirán estimulando cada vez más la renovación y la profundización de los conocimientos relativos al abastecimiento, la calidad, la conservación y la comercialización del mejillón.

El segundo milenio se acerca y hacia finales de siglo está previsto se encuentren soluciones a muchos problemas que actualmente estamos intentando resolver. No obstante surgirán nuevos problemas de manera que la optimización de la producción del mejillón seguirá siendo un desafío perpetuo.

Un enfoque realista sigue siendo, no obstante, como imperativo de primer orden, el salvaguardar los intereses del consumidor, concretamente en lo que respecta a la producción de productos del mejillón de calidad, a un precio razonable.

Asimismo, de cara al futuro se deberá afrontar el reto de reflexionar sobre la relación entre el sector extractivo e industrial, de cómo se hacen las cosas y qué cosas se hacen o deben hacerse y que entre todos las valoremos en beneficio de todos.

Decir también, que el sector cultivador de mejillón y sobre todo el industrial transformador del mismo tanto en conserva como en congelado, han realizado en los últimos años un esfuerzo inversor, no exento de dificultades y cambios, para incrementar su productividad, mejorar su estructura financiera y consolidar su posición en los mercados, ganando así en competitividad e internacionalización.

Decir que, si bien con la entrada en funcionamiento de los nuevos mecanismos presupuestarios: el IFOP y la Iniciativa Pesca, para alcanzar los objetivos de la Europa Azul, con las que el sector del mejillón e industrial transformador del citado producto intenta paliar situaciones anteriores de agravio. El esfuerzo sectorial también podrá producir que en algunos casos se puedan desarrollar reconversiones las cuales por parte de las Administraciones se deberán apoyar económicamente, pero sin premuras de tiempo en su realización, que distorsionen de tal manera que se produzcan traumas sectoriales y regionales.

Por otra parte, uno de los elementos más relevantes para propiciar la competitividad y la internacionalización de las empresas de este sector, es disponer de infraestructura científico-tecnológica.

El Centro Técnico Nacional de Conservación de Productos de la Pesca (CECOPESCA) es un Centro de I+D de origen empresarial que tiene como misión el contribuir al desarrollo del sector dentro del sistema ciencia-tecnología-empresa-mercado, mediante el fomento de la calidad y de la innovación y desarrollo tecnológico en las industrias, así como jugar un papel importante en la formación y especialización de sus trabajadores. En definitiva, jugar un papel activador y eficaz en las empresas.

Las empresas apuestan con la ayuda de CECOPESCA por el mantenimiento y consolidación del sector, dentro de un mercado abierto y mundial, ocupando, si es posible, posiciones de liderazgo en el futuro socioeconómico.

Decir que dicho Centro está acreditado por la Entidad Nacional de Acreditación (ENAC) según las normas europeas EN 45.001 y GUIA ISO 25, para la competencia técnica de los laboratorios de ensayo en aspectos: "físico-químicos, microbiológicos y toxicológicos de productos de la pesca y de la acuicultura y materias primas afines. Control de envases" con el Nº 96/LE230 y especialmente para los ensayos microbiológicos y de bitoxinas marinas (DSP, PSP y ASP) en moluscos bivalvos, mejillón entre otros. Asimismo, CECOPESCA como brazo de innovación y tecnología, así como de investigación y desarrollo de las empresas asociadas a ANFACO, es un centro reconocido de Control de Calidad de productos de la pesca y de la acuicultura, por la competencia de sus laboratorios tanto para las materias primas como para los productos finales elaborados a partir de mejillón, destinados tanto para la Unión Europea, como para países extracomunitarios. También, según la Orden de la Consellería de Sanidad del 20 de Noviembre de 1.987 (D.O.G.A. 11 de Diciembre 1987), por la que

se dictan normas para el control de moluscos bivalvos elaborados en las industrias transformadoras en su artículo 8 quedó habilitado el laboratorio de ANFACO, para los controles analíticos.

Asimismo, y para el Comercio Exterior el Acuerdo entre ANFACO y la Dirección General de Comercio Exterior del Minsterio de Economía y Hacienda, firmado el 1 de Abril de 1.996 en su cláusula cuarta, el Centro de Inspección del Comercio Exterior (SOIVRE) dependiente de dicho Ministerio, reconoce la idoneidad del laboratorio de ANFACO/CECOPESCA para la realización de análisis para la calidad, aceptando sus certificados/boletines de análisis para la emisión de las certificaciones de Conformidad de la Dirección General de Comercio Exterior. Asimismo, por la Dirección General de Salud Pública del Ministerio de Sanidad y Consumo, en escrito de 30 de Mayo 1.995, la misma comunica y accede que ANFACO, sus laboratorios, pueden efectuar los oportunos análisis, con expedición del correspondiente boletín analítico, a todas las partidas destinadas a la exportación.

II) EL SECTOR MEJILLONERO EN GALICIA (ESPAÑA)

Galicia, que es una comunidad que se caracteriza por su extensa costa, cuenta con un ecosistema privilegiado para la producción acuícola, debido a su configuración en base a rías.

Sin duda, ésto ha redundado en que la acuicultura presente una gran importancia dentro del tejido industrial gallego, sobre todo en lo concerniente al cultivo del mejillón, dado que Galicia (que concentra prácticamente la totalidad de la producción nacional) es el segundo productor mundial de este molusco, tras el emergente mercado chino, y el primer productor europeo.

El sector mejillonero es un sector tradicional en Galicia, basado en explotaciones de tipo familiar, estando productivas en la actualidad del orden de 3.356 bateas, de las que alrededor de 2.400 se hallan en la Ría de Arosa.

La atomización del sector mejillonero es muy acusado; alrededor del 30% de las bateas pertenecen a un único propietario (57% de los cultivadores) y sólo un 25% de las mismas pertenecen a propietarios con más de 3 bateas (9% de los propietarios). Las mayores explotaciones alcanzan entre 30 y 50 bateas.

Este hecho influye en su mecanización, pues se estima que el abordarla sólo es rentable a partir de explotaciones de 5-8 bateas, con lo que únicamente el 0,3% de las explotaciones presentan características de explotación industrial con más de 8 bateas.

El total de las bateas generan un empleo directo de aproximadamente 13.000 personas y un valor en primera venta entre 10-12.000 millones de pesetas.

Se estima un rendimiento de 30 toneladas por hectárea y año, (aproximadamente en términos medios de 50 toneladas por batea).

En cuanto al destino final del mejillón, a grandes rasgos es el siguiente:

—33% de la producción se canaliza hacia el mercado en fresco.
—39% de la producción se canaliza hacia la industria conservera.
—28% de la producción se canaliza hacia el congelado.

Es de destacar el progresivo incremento del mercado congelado, en detrimento del mercado en fresco, por la propia tendencia de los nuevos hábitos de consumo, y la estabilización del consumo de mejillón con destino a la conserva.

Dentro de lo que es la conserva de mejillón, es necesario reseñar que en el año 1.996, un 9,6% del valor del total de conservas de pescados y mariscos en España corresponde al mejillón, que representa un 5,1% de la producción española de conservas y que genera el 6% de los beneficios del sector conservero, pero con tendencia a la baja.

ORIGEN DE LAS IMPORTACIONES

MEJILLONES CONGELADOS

ESPAÑA	1995		
	Valor (mill. ptas)	Volumen (tons.)	P. Medio (ptas./kg.)
N. Zelanda	546	1309	417
Francia	6	41	146
Portugal	6	27	222
Italia	3	19	158
Mauritania	1	10	100
Papua-N. Guinea	4	10	400
Irlanda	1	4	250
Dinamarca	0	1	0
Chile	0	1	0

MEJILLONES CONGELADOS

ESPAÑA	1996		
	Valor (mill. ptas)	Volumen (tons.)	P. Medio (ptas./kg.)
N. Zelanda	397	997	398
Italia	15	122	123
Francia	8	53	151
Países Bajos	8	11	727
Dinamarca	1	8	125
Bélgica-Lux	0	2	0
Portugal	1	2	500
Chile	0	1	0

MEJILLONES CONGELADOS

GALICIA	1995		
	Valor (mill. ptas)	Volumen (tons.)	P. Medio (ptas./kg.)
N. Zelanda	178	417	427
Portugal	1	3	333

MEJILLONES CONGELADOS

GALICIA	1996		
	Valor (mill. ptas)	Volumen (tons.)	P. Medio (ptas./kg.)
N. Zelanda	169	418	404
Bélgica-Lux	0	2	0

EXPORTACIONES DE MEJILLONES VIVOS, FRESCOS O REFRIGERADOS

	1995		1996	
	ESPAÑA	GALICIA	ESPAÑA	GALICIA
Valor (Mill. pts.)	1.665	1.167	1.743	1.232
% Galicia s/España		70,09%		70,68%
Volumen (Tons.)	18.893	14.663	19.399	14.685
% Galicia s/España		77,61%		75,70%
Precio medio (Pts/kg.)	88	80	90	84

IMPORTACIONES DE MEJILLONES VIVOS, FRESCOS O REFRIGERADOS

	1995		1996	
	ESPAÑA	GALICIA	ESPAÑA	GALICIA
Valor (Mill. pts.)	432	3	375	2
% Galicia s/España		0,69%		0,53%
Volumen (Tons.)	3.566	40	2.903	10
% Galicia s/España		1,12%		0,34%
Precio medio (Pts/kg.)	121	75	129	200

EXPORTACIONES DE MEJILLONES CONGELADOS

	1995		1996	
	ESPAÑA	GALICIA	ESPAÑA	GALICIA
Valor (Mill. pts.)	200	177	856	617
% Galicia s/España		88,50%		72,08%
Volumen (Tons.)	699	620	2.773	2.083
% Galicia s/España		88,70%		75,12%
Precio medio (Pts/kg.)	286	285	309	296

IMPORTACIONES DE MEJILLONES CONGELADOS

	1995		1996	
	ESPAÑA	GALICIA	ESPAÑA	GALICIA
Valor (Mill. pts.)	570	180	434	169
% Galicia s/España		31,58%		38,94%
Volumen (Tons.)	1.426	421	1.200	420
% Galicia s/España		29,52%		35,00%
Precio medio (Pts/kg.)	400	428	362	402

EXPORTACIONES DE MEJILLONES EN CONSERVA

	1995		1996	
	ESPAÑA	GALICIA	ESPAÑA	GALICIA
Valor (Mill. pts.)	567	504	702	558
% Galicia s/España		88,89%		79,49%
Volumen (Tons.)	955	881	1.046	932
% Galicia s/España		92,25%		89,10%
Precio medio (Pts/kg.)	594	572	671	599

IMPORTACIONES DE MEJILLONES EN CONSERVA

	1995		1996	
	ESPAÑA	GALICIA	ESPAÑA	GALICIA
Valor (Mill. pts.)	432	25	437	14
% Galicia s/España		5,79%		3,20%
Volumen (Tons.)	697	40	644	26
% Galicia s/España		5,74%		4,04%
Precio medio (Pts/kg.)	620	625	679	538

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EL MEJILLÓN EN LA UNIÓN EUROPEA (2): SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS DE SU CULTIVO, COMERCIALIZACIÓN E INDUSTRIALIZACIÓN EN ITALIA E IRLANDA

THE MUSSEL IN THE E.U. (2): PRESENT SITUATION AND FUTURE PERSPECTIVES FOR CULTIVE, COMMERCIALIZATION AND INDUSTRIALIZATION IN ITALY AND IRELAND

MR. MARIO BUSSANI
PRESIDENTE FEDERAZIONE ITALIANA MARICOLTORI

MR. GERRY O'SULLIVAN
MAGANER EUROPEAN MARKETS IRISH SEA FISHERIES BOARD (BIM), IRLANDA

MODERADOR/*CHAIRMAN:*
D. ANDRÉS CERDEIRAS LEMOS

EL MEJILLÓN EN LA UNIÓN EUROPEA (2) SITUACIÓN ACTUAL Y PERSPECTIVAS FUTURAS DE SU CULTIVO, COMERCIALIZACIÓN E INDUSTRIALIZACIÓN EN ITALIA E IRLANDA

MR. MARIO BUSSANI
PRESIDENTE FEDERAZIONE ITALIANA MARICOLTORI

INTRODUCTION

Mussels represent a natural food resource, not only for the producers, but also for the whole humanity, worldwide spread; their importance is not comparable with other marine species and their growing goes up to at least two thousand years before Christ. At present, "the oyster of the poor" is on one side neglected and on the other penalised by both national laws and communitary directives, which have no relation with health in general, and prophilaxis in particular. On this purpose, it would be necessary to train first the officers in charge, then the population of each single state.

But, economically speaking, the major hindrance is represented by both a market demand and a supply of a merely fresh product: it means that only a short part of it is preserved in different ways.

All this implies an excess of production during some seasons and a lack of it in some others. In such a way, the consumers cannot programme an annual continuos cycle of consumption and turn to other food.

In order to prove these statements, which are true in particular regarding the Italian market, and to verify the exact causes of this decompensation, the Federazione Italiana di Maricoltori has interviewed 326 commercial enterprises and, not too suprisingly, the results have been as follows.

QUESTIONNAIRE

Underline the word that fits best the actual situation.

1) Do you employ mussels in your firm?

YES alive mussels
deep-frozen mussels
preserved mussels

NO mussels are unknown to the market
mussels are not appreciated
mussels are not on the market
mussels are too expensive

2) Reserved to mussel-user firms: how do you preserve mussels?

without any addition
in oil
with mixture
with tomato-sauce

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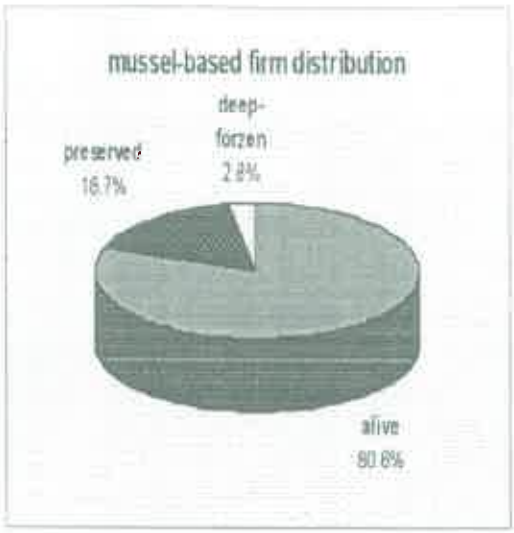
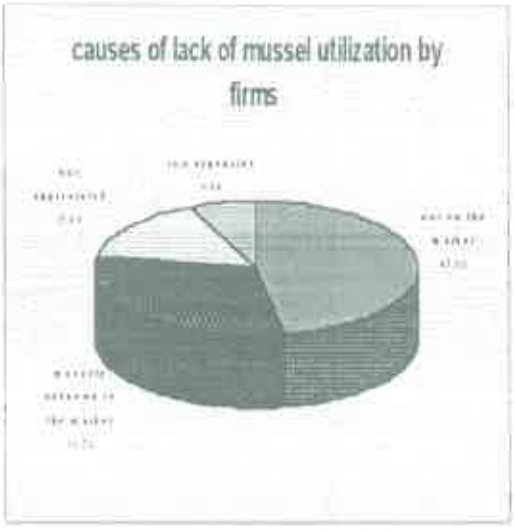
3) As regards alive mussels, the national production is:
poor
fair
abundant

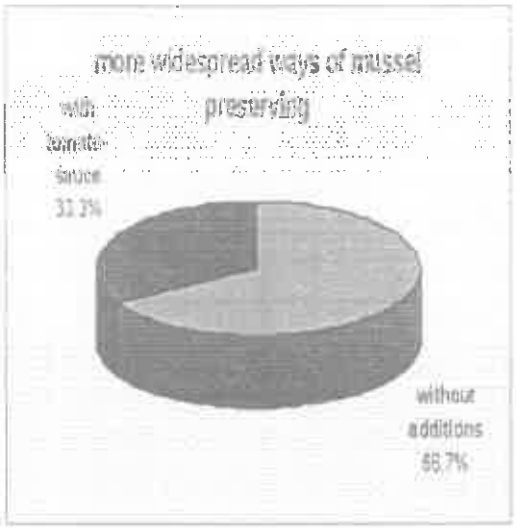
ANSWERS TO THE QUESTIONNAIRE

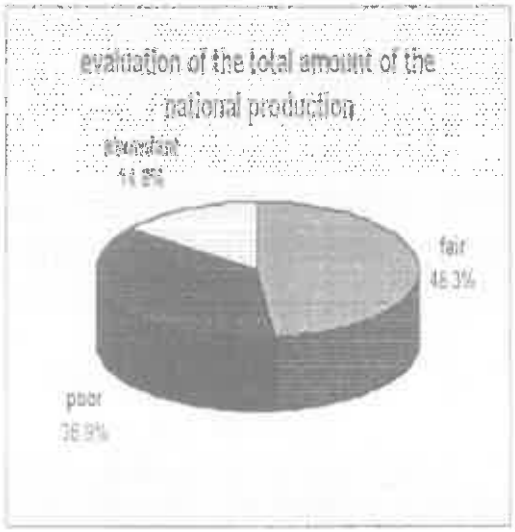
N. 203 firms out of thw 326 chosen as significant sample answered the questionnaire. The answers have the following distribution:

Answer	Number Of Firms	Corresponding Percentage	Notes
YES	36	17.7	percentage calculated with respect to the total amount of the 203 answering firms
alive	29	80.6	
deep-frozen	1	2.8	
preserved	6	16.7	
NO	167	82.3	percentage calculated with respect to the total amount of the 203 answering firms
mussels unknown	51	30.5	
not appreciated	26	15.6	
not on the market	79	47.3	
too expensive	11	6.6	
MUSSEL PRESERVING	6	16.7	percentage calculated with respect to the firms which answered affirmatively the Ist question
without additions	4	66.7	
in oil	0	0	
with mixture	0	0	
with tomato-sauce	2	33.3	
NATIONAL PRODUCTION			
poor	75	36.9	
fair	98	48.3	
abundant	30	14.8	









CONCLUSION

It is necessary and urgent, now, that the EU Health Commission analyses more deeply the problem of bivalvular mussels. They have to convince themselves that the DSP, together with other microbiological phenomena, do not belong only to this peculiar kind of food, but also to some others, with particular regard to raw vegetables. In any case, they have no harmful effect such as to cause an outbreak of a European crisis, as shown by the communitary directive n. 492/91, which is, still at present, lacking in the regulation foreseen by the rule itself. Subsequently, the governments of each member state have only to adjust: they have to follow scrupulously what foreseen by the EU, without putting any further limitation.

Without these understandings, an unfair competition between the operators of this field, and a subsequent rise in the production crisis, will be inevitable.

All this can be partially solved by both an effective preservation of the product and by its processing in the innovative culinary proposals: this can be proposed to the traditional market exclusively by a European producers union. Furthermore, it is necessary to sensitize the wide communities, such as: hospitals, schools, barracks and so on, in order to let them find in this food a systematic source of consumption.

PRESENT SITUATION AND FUTURE PERSPECTIVES FOR CULTIVATION, COMMERCIALIZATION AND INDUSTRIALIZATION OF MUSSELS IN IRELAND

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I am very happy to have the opportunity to discuss with you today developments in the Irish mussel industry and I would like to thank in particular ANFACO for inviting me to speak at this important conference. As we have already heard in the various sessions of the conference there have been many important developments in the mussel industries of various countries in recent years. Ireland is no exception to this trend. In fact the Irish mussel industry has been one of the most dynamic sectors in the whole Irish seafood industry over the past 10-15 years. This development is due to the fact that seveval new production programmes have commenced in various parts of the country in recent years. These programmes have in turn spawned a new mussel processing industry. In the European context, while Ireland is a relatively small mussel producer it will be one of the fastest growing over the next 10 years.

I would like to begin this presentation by outlining the recent production situation in Ireland. I will then go on to describe the utilization and marketing or Irish mussels.

PRODUCTION TRENDS

Firstly, I would like to present some figures on the production trends of Irish mussels Ireland produces one species: *mytilus edulis*. There are essentially two methods of cultivation

1) ***extensive cultivation*** - so called bottom or dredged mussels - as practiced in the Netherlands.

2) ***intensive cultivation*** - suspended mussels grown from ropes submerged in the sea - so called rope mussels. This method is also found in the Mediterranean and in parts of the west coast of France. There is also suspended cultivation using poles or stakes in Ireland - the bouchot method which is widespread in France but current Irish production is probably less than 100 tonnes per annum.

EXTENSIVE CULTIVATION

Mussels have been farmed extensively in Ireland for many years. This method relies on mussel seed transfer to high growth areas. Fully grown mussels are then harvested through dredging. Table 1 shows the production trend since 1980 when total output in Ireland was under 5000 tonnes. Since then production has climbed to a maximun of 15,000 tonnes in 1990. It subsequently declined and the estimate for 1996 is around 11,000 tonnes. The reason for the declined and the estimate for 1996 is around 11,000 tonnes. The reason for the decline in production since 1990 relates mainly to poor seed production in the south west region.

Extensive cultivation of mussels in Ireland takes place in 4 main areas: the south east (Wexford/Waterford) produces around 6000 tonnes; production in the south west (Cromane/Tralee) amounts to approximately 2500 tonnes. There is an estimated 1000 tonnes produced in the north, in the Donegal region, while on the east coast production is also around the 1000 tonnes mark. The fastest growing region at the moment is the south west which may produce 4000 tonnes during the coming season.

The main limiting factor for further expansion in extensive mussel cultivation in Ireland is now insufficient seed. The main seed producing area is Wexford, in the south east, which has an annual seed output of around 10,000 tonnes. Cromane in the south west can produce around 3000 tonnes of seed. In the short term then, between now and the year 2000, the production of extensively cultured mussels in Ireland is unlikely to exceed 15,000 tonnes.

INTENSIVE CULTIVATION

In contrast to extensive mussel cultivation, which has been present in Ireland for many years, intensive cultivation is relatively recent and, as can be seen from table 2, only passed the 1000 tonne mark in 1984. The table does however show a more or less steady increase since then, with production for 1996 estimated at around 6000 tonnes.

As noted carlier intensive cultivation of mussels in Ireland means essentially rope cultivation where mussels are grown in mesh "stockings" suspended from 6 m ropes which in turn hang from c. 100 m longlines. Mussel seed is typically collected from natural spat fall in the production region.

The production of rope mussels in Ireland is concentrated mainly in the south west particularly in the bays of Bantry, Kenmare and Roaring Water which have probably the largest concentration of rope mussel production in Europe. There is also a smaller production on the west and north west coast of Ireland.

In contrast to bottom grown mussels, the production of rope grown mussels in Ireland is set to expand in the short term. Some estimates point to a doubling of production over the next 4 years. The uneven growth in Irish rope mussel production in recent years has been partly due to toxic algal blooms or red tide. With the introduction of new and more sophisticated testing procedures for red tide during the past 2 years, expansion should now continue on a more steady basis.

UTILIZATION AND MARKETING

At least 90% of Irish mussels are exported. The domestic market is limited due both to its relatively small population (3.5 million) and to the absence of a strong mussel eating tradition. In terms of export markets, the French market dominates as can be seen from table 3.

The sales of mussels for export markets can be divided into 3 categories:
a. Live dredged mussels
b. Live rope mussels
c. Processed mussels

With one or two exceptions live mussel exporters tend to specialize in either the sale of dredged or rope mussels.

a. Live dredged mussels

Sales are generally organized through:

1) producers themselves - whether individually or via a cooperative, or 2) specialist live shellfish exporters.

The main market is France although sales to the north of Spain, the UK and Italy have been increasing in recent years. Prices are usually very competitive - around FF 3-4/kg CIF - and exporters tend to have little difficulty in finding markets. The market for dredged mussels in France varies from year to year depending not only on domestic production - mainly from the Barfleur region of Normandy - but also on the production in Holland and the UK. In recent years, Barfleuur production has been low, resulting in higher returns to Irish (and other) producers. A new source of competition emerged last year with a significant increase in production from the Menai Straits in Wales. Output from this source looks set to continue for the forseeable future.

Typically dredged mussels are sold in bulk form to France. There importers transfer the mussels to holding tanks for "resting" and for subsequent delivery in smaller packaging to wholesale and retail markets. Most Irish exporters do not work directly with wholesalers or retail chains.

Harvesting in Ireland begins around September/October and continues on to the following May depending on the region. In general the mussels spawn around May/June.

b. Live rope mussels

As with dredged mussels exports of live rope mussels are organized either directly by the producers themselves or through specialist shellfish exporters. The main market is also France although sales to the UK have increased recently. There are very limited sales to Spain or Italy mainly due to the longer distances to these markets. Rope mussels are less robust for travelling to more distant markets than dredged mussels.

A major difference between the rope and dredged mussel is price. Due to higher production costs, rope mussels are more expensive. However the higher price normally reflects a higher quality: rope mussels are cleaner - being sandfree - and tend to have higher meat yields - between 25 and 35% compared to berween 15 and 30% for dredged mussels.

The higher price has however meant that rope mussel exporters have encountered more problems in selling to markets such as France. In France Irish rope mussels are sold into the suspended mussel segment of the market which is dominated by French bouchot mussels. Demand for Irish rope mussels in France tends to increase as the French bouchot season comes to an end - this is normally during January/February. However this period is often difficult for Irish rope mussel producers as the risk of spawning increases from February. In general, French demand for live Irish rope mussels varies from year to year depending on the level of the French bouchot production. This uneven demand in the French market for rope mussels has encouraged Irish rope mussel producers to switch from supplying the live trade to supplying the processed mussel sector.

c. Processed Mussels

The Irish processed mussel sector has undergone a number of important changes over the past 15 years. During the 1980's, the sector was dominated by the production of frozen dredged mussels either in meat form or in the half shell. Partly due to more intense price competition in the frozen segment and partly due to stronger prices for the live product, production of frozen dredged mussels declined during the 1990's. Its place has been taken by a range of new frozen rope mussel products. One example from this range is the vacum packed mussels developed by Bantry Bay Mussels using a patented process. Fastnet Mussels also based in the Bantry area has developed a new IQF frozen-in-shell product which, like the Bantry Bay product, freezes the natural mussel juices together with the mussels themselves. A final example from the new range is a chilled vacuum packed mussels developed by Carrokeel. Overall production of processed rope mussels has been increasing over the past 10 years and is now estimated at around 2000 tonnes with France the main export market.

INDUSTRY OUTLOOK

The significant advances which have characterized the Irish mussel industry over the past 15 years are likely to continue for the foreseeable future. Current estimates put total mussel production at around 20,000/25,000 tonnes by the year 2000 with the biggest increases likely in rope mussel production. Lack of adequate seed supplies is currently one of the main constraints on expansion in extensive mussel cultivation.

On the marketing front, the key issue will not be demand, which continues to be bouyant, but price. Maximizing the return to the producer will be a key priority for the Irish industry in the medium term. The solution to this issue is likely to lie in 2 areas: a) continued diversification towards convenience, value added products and b) more efficient organization of live exports through further geographical diversification and more effective production controls.

Table 1
Irish mussel production
Extensive Cultivation

Year	Mussels (dredged) Tonnes
1980	4.557
1981	4.658
1982	5.282
1983	5.739
1984	12.640
1985	8.722
1986	9.572
1987	13.393
1988	11.048
1989	10.760
1990	15.000
1991	11.200
1992	8.731
1993	8.884
1994	9.260
1995	12.600
1996	c.11.000

Table 2
Irish mussel production
Intensive Cultivation

Year	Mussels (rope) Tonnes
1980	175
1981	200
1982	300
1983	584
1984	1.077
1985	1.636
1986	1.003
1987	1.500
1988	1.600
1989	2.800
1990	3.380
1991	4.100
1992	5.091
1993	4.773
1994	3..707
1995	5.500
1996	c.6.500

Table 3
Irish Mussel Exports 1994-1996
live/chilled/frozen

Tonnes	1994	1995	1996
FRANCE	4.300	6.000	6.500
UK	400	400	1.400
ITALY	300	600	600
SPAIN	300	200	600
GERMANY	100	300	200

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THE MUSSEL MARKET IN AFRICA: PRESENT SITUATION AND FUTURE PERSPECTIVES OF CULTIVE, COMMERCIALIZATION AND INDUSTRIALIZATION IN SOUTH AFRICA

MR. W. J. WYENBERG
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SOUTH AFRICAN MARKET

Before attempting to discuss the Mussel market in South Africa, it is necessary to give a brief overview of South Africa as a country, both Geographically and Economically.

South Africa is larger than Germany, France, Italy, Belgium and Holland combined. More than 50% of the surface area of South Africa can be described as semi-desert. The current population is approximately 40 million people of whom 50% are urban based. The racial split of the population is: 76% Black, 13% White, 8% Coloured and 3% Asian. Not disposable income averages US$1600 per annum. Protein consumption in South Africa has historically been low, with red meat and poultry being the main focus. Fish consumption in South Africa is low at approximately 3 kg per capita per annum. A significant percentage of this consumption is tinned pilchard at approximately 6 million cases per annum almost all of which is consumed by the Black market.

From this short summary one can see that the potential for a large market for mussels is extremely limited. There have, however, been numerous positive developments.

MUSSELS

The first consumers of Mussels in South Africa were the Khoi people that roamed the 3400 kilometer long coast line. Evidence of this eating habit is today found in archeological diggings. In more recent times the gathering of Mussels for home consumption has continued and the only commercial mussels were either through canned or frozen imports.

MUSSEL FARMING

The farming of mussels in South Africa is a relatively new business. In 1975 a pilot operation was funded by the Fishing Development Corporation. In this experiment the species utilised was *Mytilius Meridionalis* which is a local indigenous species. It was found to be slow growing in both rope and bottom culture. The costs were extremely high and the exercise was abandoned in 1977.

In 1985 the commercial growing of the Spanish Mussel, *Mytilius Galloprovincialis* was started in Saldanha Bay and Port Elizabeth. Both the quality and growth rates were very good. The Port Elizabeth farm was, however, greatly exposed to the elements and poor sea conditions forced the operation to close down in 1988. The Saldanha operation was more successful and by 1987 the number of producers had grown to three. Sea Harvest Corpporation was, however, the only producer actively involved in borh processing and marketing. The earlier production and marketing

activities were focused on live mussel distribution with no value adding. This proved to be financially uneconomic and today only Sea Harvest and one small new producer remain in the farming activity.

The problems and opportunities for mussel farming in South Africa can be summarised as follows:

Problems

- A hostile coastal environment with limited sheltered water
- Unpredictable weather patterns
- High level of sea squirt infestations
- Toxic red tides can cause temporary shut downs
- Unpredictable spawning times and periods
- Saldanha Bay's water is classed B Grade

Opportunities

- Grow out rates are extremely fast + 7 months from seeding to harvest
- Seed availability is in excess of farm requirements
- Saldanha Bay is nutritionally rich, low in pollution and relatively calm
- Production is competitive relative to imported products

PROCESSING

As mentioned earlier Sea Harvest is fully involved in farming, processing and marketing of mussels and mussel products and currently produces 90% of the approximately 3000 ton of mussels farmed each year. The production facilities comply with all E.U. health requirements.

PRODUCTS

The following range of products is currently available to the South African consumer from local farming and processing:

- Live mussels
- Half shell mussels
- Breaded garlic half shell mussels
- Mussel meat in garlic butter
- Crumbed mussel meat
- Smoked mussel meat
- Half shell mussel in various sauces

The market for fresh mussels is limited both due to demand and distribution distances. Live mussels currently make up less than half of the tonnage sold.

MARKETS

As mentioned earlier, South Africa has diverse population with a wide variance in income levels. The traditional Black eating habits have also not included seafood other than Pilchard. The income disparity has also prevented the purchase of value added products, such as mussels.

A further factor in the low seafood consumption in South Africa is the lack of species variety as well as the problem of long distances to be convered under high ambient temperatures. There are also few skilled specialist seafood merchants at the retailer level. Mussels have not historically been well known and the main focus has been to generate consumer awareness.

DISTRIBUTION

Mussels are sold in both the retail and food service environment. Distribution to the retailers is through the major national distribution companies with the distribution to food services being through specialist distributors.

EDUCATIONAL AWARENESS

The industry is extremely aware of the task it faces in expanding consumption.
Key factors are:

- Mussels are perceived as being a luxury item
- Mussels are seen as an hors d'ouvres rather than a main course
- There is a misconception that mussels are high in cholesterol
- Mussels are seen as a speciality item traditionally only eaten on special occasions and outside of the home
- Mussels are relatively unknown and do not fit the cooking skills of the average South African
- The South African consumer is averse to changes in traditional eating habits

PROMOTIONAL ACTIVITY

Numerous promotional campaigns have taken place through the food service industry.
These have included:

- Promotions through the Cheffing associations
- Promotions to restaurants
- Trade magazine activit
- End user competitions
- Educational lectures

Within the retail environment there have been:

- In store demonstrations
- Ranging of products for consumer choice
- Private label production
- Consumer clubs
- Product giveaways
- Television campaign

CONCLUSION

Where is the South African mussel market going? There will always be competition from imports such as New Zealand Greenlip or Dutch canned mussels. The new political dispensation is likely to bring many new low cost producers into the market, who in turn will provide product to large scale commercial processors and marketers. It is likely to remain relatively small, but will grow as farming outputs increase and consumer acceptance and understanding is improved. It is not likely that South African production will become a threat to the global mussel market.

NOTAS / *NOTES*

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