



In memory of  
**Hans Porse** (1942 - 2023)

On 14 July 2023, the global seaweed industry lost a unique capacity and pioneer of international format.

The following presentation constitutes the nomination which was instrumental in Hans Porse being named an honorary member of The International Seaweed Association in February 2023.

# Hans Porse

## Honorary member of ISA

- Hans Porse has a commercial education and background. He worked for many years with CP Kelco ApS (formerly Copenhagen Pectin A/S)
- Nearly 25 years were spent in the Asia-Pacific region besides assignments in Europe, Africa and the Americas.
- He has over the years been working in positions including regional & global director, president and chairman within areas like carrageenan seaweed sourcing and procurement, setting up carrageenan processing plants in the Philippines and carrageenan sales & marketing.



# Hans Porse

## Honorary member of ISA

- He pioneered introduction of seaweed farming in Indonesia back in the late 1970's.
- He has authored several papers about the seaweed industry.
- Currently he resides in Denmark and is involved with strategic advisory and facilitating services to the hydrocolloids industry.



# Hans Porse- brief

- Max Doty started in 1960's
- 1970's and 1980's
  - First substantial commercial quantities farmed
- Introduced carrageenan seaweed cultivation to:
  - Indonesia- Bali
  - Phillipines
  - Zanzibar
- Seedlings were sneaked on airplanes in socks





# Honorary expert



Marine Resources Development Corporation

@mrdccarrageenan

...

Hans Porse, a seaweed industry consultant, sharing his knowledge about the International Trade of Seaweeds and Carrageenan with Sales, Marketing, and R&D Department of MRDC and W Hydrocolloids, Inc. [#MRDC](#) [#CarrageenanisOrganic](#) [#Seaweeds](#) [#RicoCarrageenan](#)

Oversæt Tweet



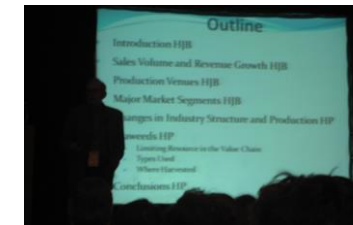


# Keynote in Mexico and Copenhagen

- Bixler and Porse in ISS 2010



**XX International  
Seaweed  
Symposium**  
Ensenada, Baja California, Mexico  
22-26 February, 2010



Region	Harvest (t)	Change (%)	Harvest (t)	Change (%)
Asia	18,000,000	10%	19,800,000	10%
Europe	1,000,000	5%	1,050,000	5%
North America	1,000,000	5%	1,050,000	5%
South America	1,000,000	5%	1,050,000	5%
Africa	1,000,000	5%	1,050,000	5%
Oceania	1,000,000	5%	1,050,000	5%
Total	23,000,000	7%	24,950,000	7%

- Porse and Rudolph in ISS 2016



# Commercial meets science

J Appl Phycol (2011) 23:321–335  
DOI 10.1007/s10811-010-9529-3

## A decade of change in the seaweed hydrocolloids industry

Harris J. Bixler · Hans Porse

Received: 29 March 2010 / Revised and accepted: 26 April 2010 / Published online: 22 May 2010  
© Springer Science+Business Media B.V. 2010

**Abstract** Seaweed hydrocolloid markets continue to grow, but instead of the 3–5% achieved in the 1980s and 1990s, the growth rate has fallen to 1–3% per year. This growth has been largely driven by emerging markets in China, Eastern Europe, Brazil, etc. Sales of agar, alginates and carrageenans in the US and Europe are holding up reasonably well in spite of the recession. However, price

tion. Stocking their factories with raw material has led to the supply problems. Sales growth continues to suffer from a few new product development successes in recent years, although some health care applications are showing some promise, i.e., carrageenan gel capsules and alginate micro-beads.

J Appl Phycol (2017) 29:2187–2200  
DOI 10.1007/s10811-017-1144-0



22ND INTERNATIONAL SEAWEED SYMPOSIUM, COPENHAGEN

## The seaweed hydrocolloid industry: 2016 updates, requirements, and outlook

Hans Porse<sup>1</sup> · Brian Rudolph<sup>2</sup>

Received: 7 October 2016 / Revised and accepted: 4 April 2017 / Published online: 24 April 2017  
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**Abstract** The seaweed hydrocolloid industry, comprising agar, alginate, and carrageenan extracts, continues to grow in the order of 2–3% per year with the Asia-Pacific region increasingly dominating the raw material and manufacturing aspects of the industry. Geographic overviews, also in a historical perspective, of seaweed raw material availability including prices and consumption, manufacturing capacities, and utilizations and sales of extracts is presented. Some current and future industry dynamics, requirements, and changing structures, e.g., Indonesia's increasingly dominant role within farming of agar and carrageenan-bearing seaweed species, randomly imposing of seaweed harvest restrictions or

**Keywords** Hydrocolloids · Agar · Alginate · Carrageenan

### Introduction

It has nearly become a triennial tradition that at the ISS representatives of the commercial, seaweed processing industry presents a review paper on historical and recent developments within its activities and, in this context, some scientific developments as well. The industry still confines itself to sourcing, extraction, and sales of relevant seaweed species for the man-





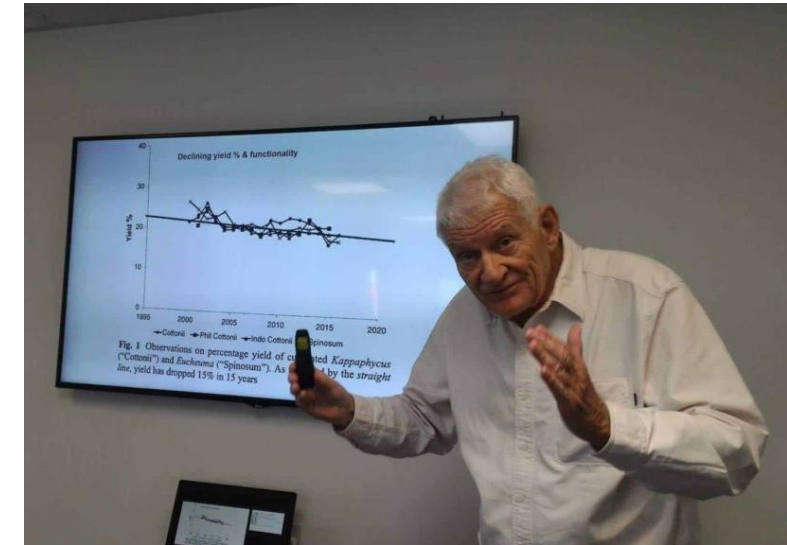
# Lively presenter and reports in scientific journals

## BREAKTHROUGH IN THE COMMERCIAL CULTURE OF EUCHEUMA SPINOSUM IN NORTHERN BOHOL, PHILIPPINES

Jose Rodolfo Lim and Hans Porse  
Genu Products Philippines, Inc., Cebu City, Philippines and  
The Copenhagen Pectin Factory Ltd., Supreme House,  
Penang Road, Singapore

The high world demand for Eucheuma spinosum during the early 1970's had encouraged the production of this species in Southern Philippines. However, due to many ecological problems such as lack of knowledge of requirements, slow growing strains, occurrence of diseases, seasonality and the unstable political conditions, production lagged behind. Production was highly unreliable and an alternate site became a must.

In 1975, Genu Products, Philippines, Inc., an affiliate of Copenhagen Pectin Ltd. in Denmark seriously considered the development of an alternate site for "spinosum" production. In November 1976, GENU started an experimental farm in



### JOURNAL ARTICLE

## Culture of *Eucheuma cottonii* and *Eucheuma spinosum* in Indonesia

IN *Hydrobiologia* — 1987, Volume 151-152, Issue 1, pp. 355-358

BY Adnan, Hariadi; Porse, H.

FROM The Copenhagen Pectin Factory Ltd [details](#)

LANGUAGE: English

PUBLISHER: Kluwer Academic Publishers

YCAR: 1987

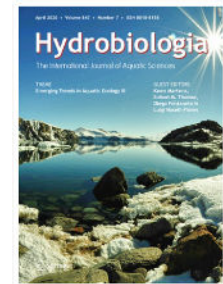
PAGES: 355-358

JOURNAL SUBTITLE: International Journal of Aquatic Sciences

ISSN: 15735117 and 00188158

TYPES: Journal article

DOI: 10.1007/BF00046152





# Historical write-up (short)

- **1975: First experimental/demonstration of a ‘Spinosum’ farming project** established in Gilutongan Island, Cebu Province, Philippines by **Hans Porse** representing Copenhagen Pectin, Denmark (CP) and its local subsidiary Genu Philippines.
  - The project managed by Jose R. In 1977, the project moved to a more suitable location on Danajon Reef, Northern Bohol including construction of a seaweed farming demonstration platform ‘Genu Ocean Farming’
- **1975: Second experimental ‘Spinosum’ farming project using locally** available seedlings was established in Pulau Samaringa off the east coast of Central Sulawesi, Indonesia by **Hans Porse** representing CP and under the auspices of the Indonesian Institute of Sciences (LIPI) represented by Hasan Mubarak.

# Historical write-op (short)

- 1984: CP, to hasten introduction, decided to let Bambang Tjiptorahadi, assisted by Made Simbik, start up a combined 'Spinosum' and 'Cottonii' project on Nusa Lembongan Island, southeast of Bali.
- 'Cottonii' farming was introduced for the first time in Indonesia, based on 6 kg of fresh seedlings brought in from Bohol, Philippines.
- The project took off and became commercially viable, relatively quickly. This was made possible via family farms and operations soon spread to nearby Islands such as Nusa Penida, Nusa Ceningan, and beyond.



# Historical write-up (short)

- 1987: CP and the Ministry for Research & Technology (BPPT) conducted a 1-week seaweed farm workshop in Bali. Participants were from the government, fishermen, and private companies (especially from Central and Eastern Indonesia); this event thereby further increased awareness and interest for venturing into seaweed farming
- 1989: Supplementing CP's farming activities in the Philippines and Indonesia, a combined 'Spinosum' and 'Cottonii' farming project was established on Zanzibar. Later, several people from CP's staff in the Philippines joined the project.
- This project was initiated with 2 kg of fresh 'Cottonii' seedlings from Bohol, Philippines. This was later supplemented with fresh 'Spinosum' seedlings also originating from Bohol 1990s



.... shortened from Ref: The seaweed hydrocolloid industry: 2016 updates, requirements, and outlook. Porse and Rudolph 2016



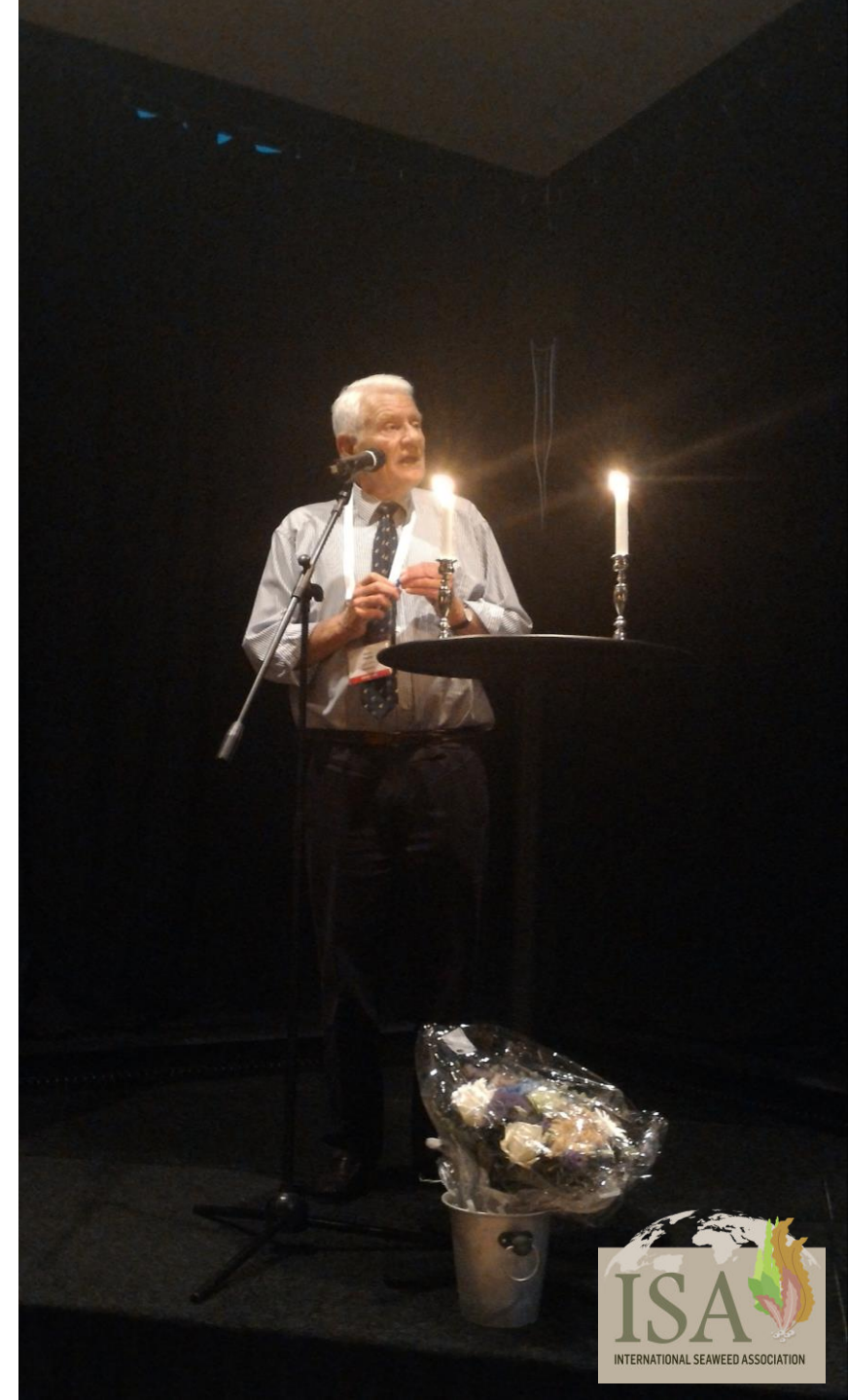
# Historical write-op (short)

- 1990: On the second half of that year, the first commercial 'Spinosum' quantities were shipped from Zanzibar via family farms and the concept later spread to nearby Pemba Island and mainland Tanzania. 'Cottonii' on the other hand was difficult to farm then and now.



# Honorary member of ISA

- Hans Porse on stage at the banquet at the ISS 2016, Copenhagen Denmark





# Hans Porses full write-op

- Porse and Rudolph 2016
- The seaweed hydrocolloid industry: 2016 updates, requirements, and outlook.
- <https://link.springer.com/article/10.1007/s10811-017-1144-0>
- [DOI: 10.1007/s10811-017-1144-0](https://doi.org/10.1007/s10811-017-1144-0)
- The first article Bixler and Porse, 2011 can be found here:
- <https://link.springer.com/article/10.1007/s10811-010-9529-3>



increases. For example, in 2014, 1 t of “Gigartina” sold for approximately USD 4500 versus “Cottonii” typically being sold at around USD 1200. *Chondrus crispus* (“Chondrus”), previously the most important seaweed type for carrageenan manufacturing, nearly completely lost its importance because of competition from the Asia-Pacific, high prices, dwindling supplies, and environmental issues (Bedford Institute of Oceanography—Commercial Seaweeds, 2015, p. 2).

It can be seen from the foregoing that open water farming of carrageenan-bearing seaweeds, as initiated and developed by Dr. Maxwell S. Doty and Mr. Vicente B. Alvarez in the 1960s, was and still is “the savior of the carrageenan industry.”

To dispel myths and misinformation, setting the record straight, and for historical reasons, Table 10 shows a timeline for the above, including “who did what, where and when.”

**Table 10** Introduction and commercial development of tropical carrageenan seaweed farming in the Philippines, Indonesia, and Tanzania (Zanzibar)

#### A historical review

##### 1960s

1967: First experimental “Cottonii” farming project established in Caluya Island, Antique, Philippines by Dr. Maxwell S. Doty, University of Hawaii and Vicente Alvarez initially representing the Bureau of Aquatic Resources (BFAR), supported by Dr. Gavino Trono, University of the Philippines and Dr. Inocencio A. Ronquillo (BFAR). Project funded by Marine Colloids Inc., Philippines/USA which Vicente Alvarez later joined. Project moved to Ilin, Mindoro (1969) followed by Tapaan Island, Sulu (1970) and finally Sitangkai, Tawi-Tawi (1971)

1967: First experimental “Spinsum” farming project established in Pulau Tikus, Thousand Islands, Bay of Jakarta, Indonesia by Soerjodinoto and assisted by Hariadi Adnan, Bambang Tjiptonhadi and others. Project funded by The Indonesian Naval Hydrography Directorate. Project terminated in 1970 due to the untimely demise of Soerjodinoto and lack of funds

##### 1970s

1974: First substantial commercial quantities of famed “Cottonii” out of Sitangkai became available and soon the concept was taking off elsewhere in the Tawi-Tawi province and beyond. Commercial, family-based carrageenan seaweed farming had arrived for the first time.

1975: First experimental demonstration of a “Spinsum” farming project established in Gilitongan Island, Cebu Province, Philippines by Hans Porse representing Copenhagen Pectin<sup>a</sup>, Denmark (CP) and its local subsidiary Genu Philippines. The project managed by Jose R. Lim and assisted by Tirso Lirasan, Saturnino Soria Jr., Silver Cabanero, and others. In 1977, the project moved to a more suitable location on Danajon Reef, Northern Bohol including construction of a seaweed farming demonstration platform “Genu Ocean Farming”

1975: Second experimental “Spinsum” farming project using locally available seedlings was established in Pulau Samuringa off the east coast of Central Sulawesi, Indonesia by Hans Porse representing CP and under the auspices of the Indonesian Institute of Sciences (LIPI) represented by Hasan Mubarak. Project managed by Hariadi Adnan assisted by Bambang Tjiptonhadi, Bambang Basuki, Pan Tarsin, and others. In 1978, the project moved to Terora Village, Nusa

**Table 10** (continued)

Dua, Bali Province; it was started with 6 kg fresh “Spinsum” seedlings brought along from Kendari at the east coast of Central Sulawesi for propagation

1979: “Spinsum” project on Danajon Reef, Philippines started to become viable and the first commercial quantities were shipped out by Genu Philippines and family-operated farms. Soon thereafter, the farming concept spread to other parts of the Visayas Region and beyond

##### 1980s

1981: The “Spinsum” project in Terora Village, Geger, Bali started to become viable and the first commercial quantities were shipped out by the team of Hariadi Adnan and family-operated farms

1984: CP, to hasten introduction, decided to let Bambang Tjiptonhadi, assisted by Made Simbik, start up a combined “Spinsum” and “Cottonii” project on Nusa Lembongan Island, southeast of Bali. “Cottonii” farming was introduced for the first time in Indonesia, based on 6 kg of fresh seedlings brought in from Bohol, Philippines. The project took off and became commercially viable, relatively quickly. This was made possible via family farms and operations soon spread to nearby Islands such as Nusa Penida, Nusa Ceningan, and beyond

1987: CP and the Ministry for Research & Technology (BPPT) conducted a 1-week seaweed farm workshop in Bali. Participants were from the government, fishermen, and private companies (especially from Central and Eastern Indonesia); this event thereby further increased awareness and interest for venturing into seaweed farming

1989: Supplementing CP’s farming activities in the Philippines and Indonesia, a combined “Spinsum” and “Cottonii” farming project was established on Zanzibar, Tanzania by Povl Twide and Tirso Lirasan from CP and Finn Mortensen, a Dane who was already living in the area. Later, several people from CP’s staff in the Philippines joined the project, e.g., Ruel Piezas, Rosalio Ompad, Vianny Cabanero, and others. This project was initiated with 2 kg of fresh “Cottonii” seedlings from Bohol, Philippines. This was later supplemented with fresh “Spinsum” seedlings also originating from Bohol

##### 1990s

1990: On the second half of that year, the first commercial “Spinsum” quantities were shipped from Zanzibar via family farms and the concept later spread to nearby Pemba Island and mainland Tanzania. “Cottonii” on the other hand was difficult to farm then and now

1990–1994: CP represented by Brian Rudolph started a project with Dr. Donald P. Cheney of Northeastern University, Boston, USA, to develop improved seaweed strains as farming material, based on somatic hybridization techniques. Plants were developed and tested under controlled conditions in Bali and Kinabati, South Pacific. Initial results were promising and could be developed further when timely and appropriate

<sup>a</sup>Today FMC

<sup>b</sup>CPKelco

Aside from the countries mentioned, other similar projects were later developed and in many other places of the world (Neish 2005) although mostly showing modest results and very limited production. Sources: Delmendo et al. (1992), Lim and Porse (1981), Adnan and Porse (1987), and Lirasan and Twide (1993)

Production of carrageenan is shown in Table 11 and classified as refined (RC Alcohol and RC Gel Press) and semi-refined carrageenan (SRC Food and SRC Pet Food).