

New method of Cultivation of *Caulerpha*



Caulerpa lentillifera
growing on the coast in Vietnam, by Tsusui



**Traditional *Caulerpa* salad
in Philippines**



***Caulerpa* cultivation ponds in Cebu,
Philippines**



百年プリント

Harvested fronds of *Caulerpa*



***Caulerpa* products of Cube market,
in Philippines**



**Seaweed of salad, *Caulerpha* dish
in Japan**

new seaweed salad since 1990s



**Bigger tank culture system of *Caulerpa*
with deep seawater, Okinawa**



Sandwiched seeds between two plates of nets



New plants appeared on the nets



**Crop of *Caulerpa* growing
on the net**

3 : *Cladosiphon okamuranus*
Mozuku in Japanese

New cultivated species since 1990s





Mozuku dish in Japan

Production of *Cladosiphon*

Japan: 20,000 ton (wet) for food
New cultivated species since 1990 s

Subject

- 1. As the technique of cultivation, the methods is completed by using nori nets**
- 2. The cultivation ground is not enough**
- 3. Unstable cultivation under water condition by the windy and rain**



***Cladosiphon* cultivation ground in the coral reef, tropical waters, Okinawa**



***Cladosiphon* cultivated nets fixed
at the bottom of 1-2 m depth**



Suction pump for harvesting



Harvest stored in a large baskets on the boat



Washing and cleaning in the cooperative



Salting fronds at the processing plant



Mozuku, processed food put with vinegar

4 : *Enteromorpha* cultivation





Drying *Enteromorpha* fronds
Aonori in Japanese



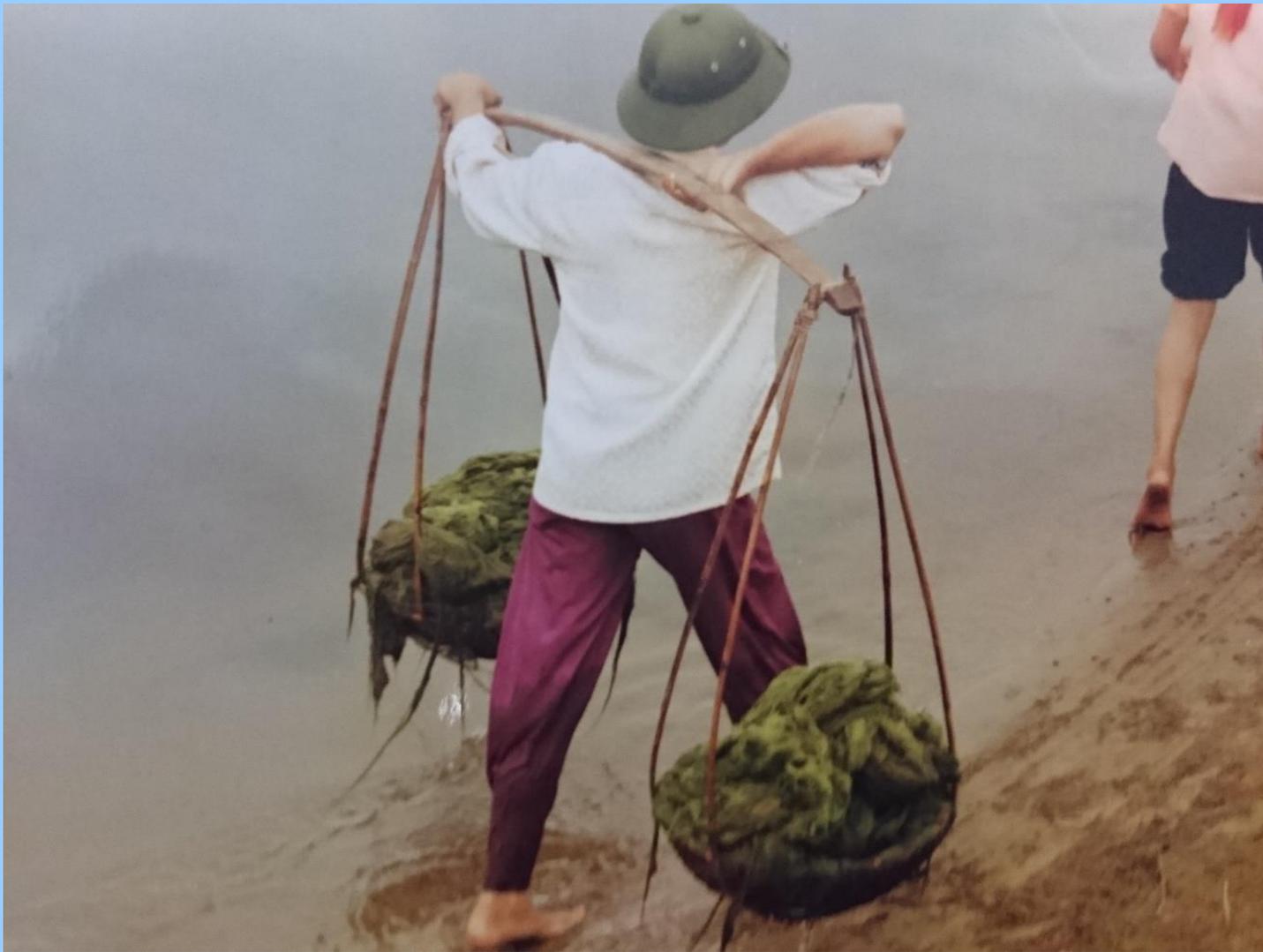
Enteromorpha powder
used traditional cakes



Green Seaweed powder



Green seaweed, *Enteromorpha* fronds grows a lot tick in the lagoon, Vietnam



**Vietnam lady carrying
the *Enteromorpha* products**

Production of *Enteromorpha*

Japan: 1,000 ton (dry) for edible

Korea: 1,000 ton (dry) for edible

China: 500 ton (dry) for edible

Subject:

- 1. Cultivation technology is not completed**
- 2. Improvement in the quality**
- 3. Demand does not catch up supply in Japan, Korea and China**



**Harvesting of nature fronds in the river
in Japan**



Fronds with sun drying



Packing of products of natural fronds



***Enteromorpha prolifera* fronds
cultivated on the net in Japan**



**Natural seeding of *Enteromorpha*
with cultivation nets on the seed place**



**Transplanting stage of cultivation
nets after two months of the set**



**The cultivation net is set up to
depth of the water 50cm**



**Floating of *Enteromorpha* cultivation
in the mouth of Yoshino River**



Harvesting of *Enteromorpha* fronds cultivated by floating system in the brackish waters



Washing of fronds



Inserting in consecutive dryers, in China



Working on the junk removal

The bag filling product is auctioned off



The product packed in a bag is auctioned off

5 : *Ulva* products of natural growing





***Ulva ohnoi* Hiraoka&Shimada
growing in Japan, Japanese:Aosa**



Floating *Ulva* fronds (Called: Green tide)



Harvesting tool for *Uvula* fronds



**Collecting *Ulva* fronds at
the processing plant**



Processing *Ulva* fronds



Washing and dehydration



Untied *Ulva* fronds



Removal of stone and others



Powder of *Ulva* fronds



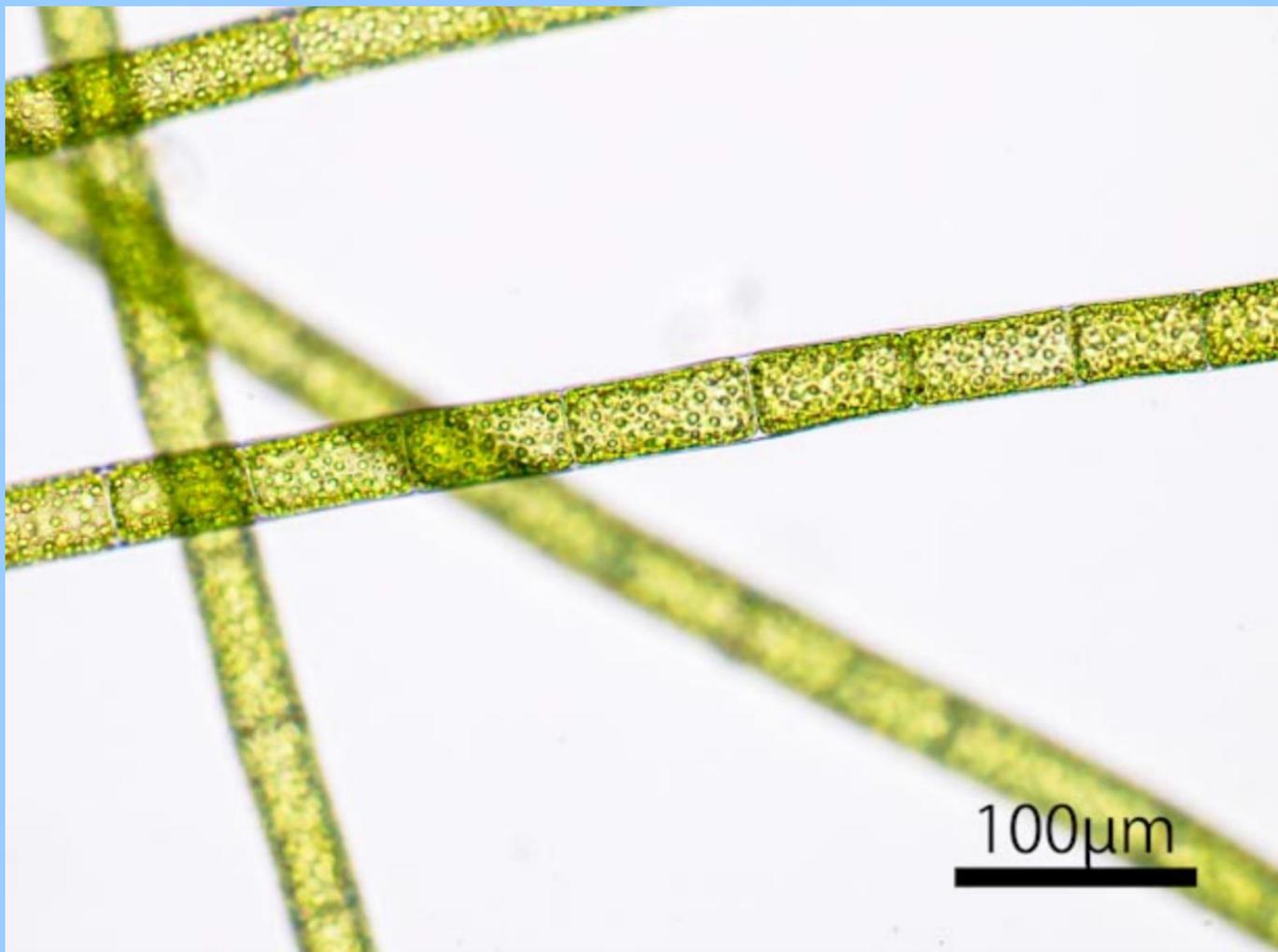
Packed *Ulva* powder products



**Japanese dish with *Ulva*
powder**

**6 : Co -cultivation with prawn and
Seaweed, *Chaetomorpha*
by Dr. data of Tsutsui in Thailand**





**Green seaweed, *Cheatomorpha* sp.
for co-cultivation, by Tsuitsui**



**Co-cultivation pond with
prawn and *Cheotomorpha***



Prawn with pink color

The giant tiger prawn, *Penaeus monodon* was grown in mono-culture, and in co-culture with *Chaetomorpha* sp. to investigate the potential benefits of co-culturing.

Result

1. The final mean body weight of co-cultured prawns was approximately **50 %** heavier than that of mono-cultured prawns.
2. The Growth rate in co-culture tanks was **4.79 ± 0.08** % day⁻¹, which was higher than that in monoculture tanks (**4.14 ± 0.27** % day⁻¹).
3. The Feed conversion ratio was **38.9 %** lower in co-culture than in monoculture tanks, **for eating by prawn.**

**Proposal for the cultivation of
Kappaphycus and *Eucheuma***

***K.alvarezii* cultivation of warm waters in Japan**

They include anticancer action, antibacterial action, functional ingredients such as the skin activity action, lectin, a dietary fiber in a lamina, and there is much potassium content.





Seeding of *K.alvarezii* fronds in July



Growing fronds after one month



Growing fronds after two months



Growing fronds after one month



Harvesting of the fronds



**Tank culture of seeds in the water
season (upper 23°C, watertemperare)**



2015/02/18



2015/02/18

**Italian dish with *K.alvarezii* material
in Japan**



**pudding using the powder
made in Japan**

- 1. Proposal of the cultivation possibility in the north Vietnam, 20-30°C , as global warming advances.**
- 2. Selection study on the strains with much carrageenan contents and fast-growing.**
- 3. Promotion of co-cultivation with prawn.**
- 4. Circulation (marketing) of the products**
- 5. New applications for health, personal care & beauty products**

**Thank you for your kind
attention**