



Phytoplankton (Algae)
Culture

Dr. Majid Makky Taher

Importance of phytoplankton culture for fish culture

- 1- Very important as primary food for fish larvae after consuming yolk sac
- 2- Important source for amino acids and fatty acids (easy for digest)

Kinds of phytoplankton

- (*Tetraselmis chunii*) ●
- (*Chlorella spp.*) ●
- (*Nannochloropsis oculata*) ●
- (*Isochrysis spp.*) ●

Factors affecting phytoplankton growth

- Water Temperature •
- Light Intensity •
- pH •
- Dissolve Oxygen •

Environment suitable for Algae Culture

Fresh Water ●

Brackish Water ●

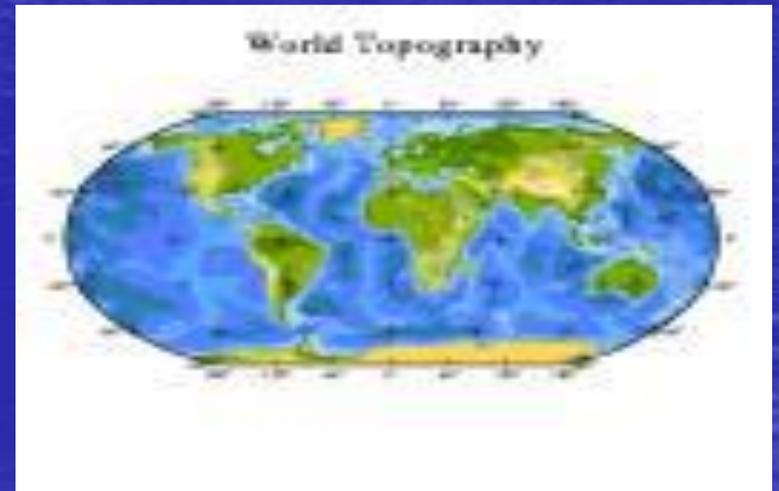
Salt Water ●

Sources of Marine Algae

**Commercial Marine
Culture Centers**



**From Environments
Seas, Oceans, ..etc.**



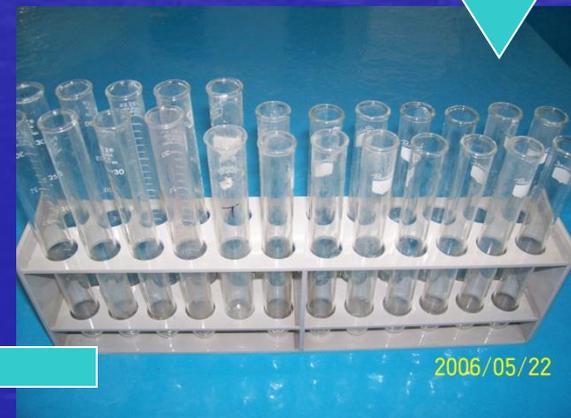
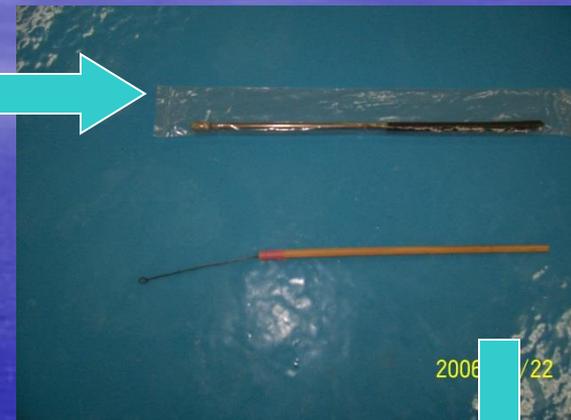
Methods of Algae Collection



Isolation of Collected Algae

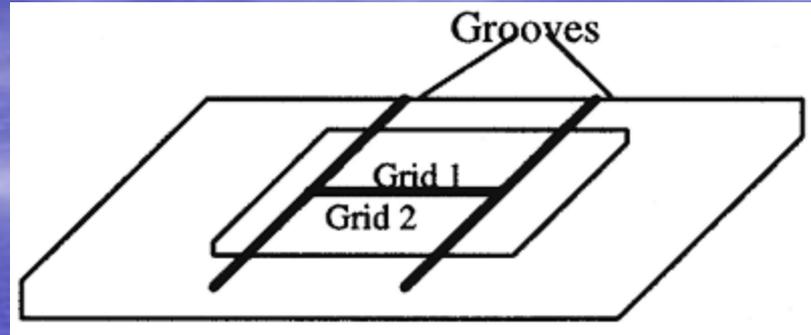


Algae Cultivation after Isolation

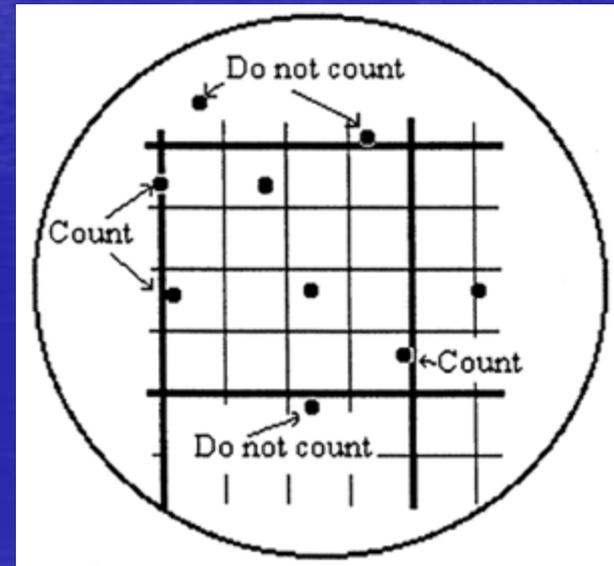
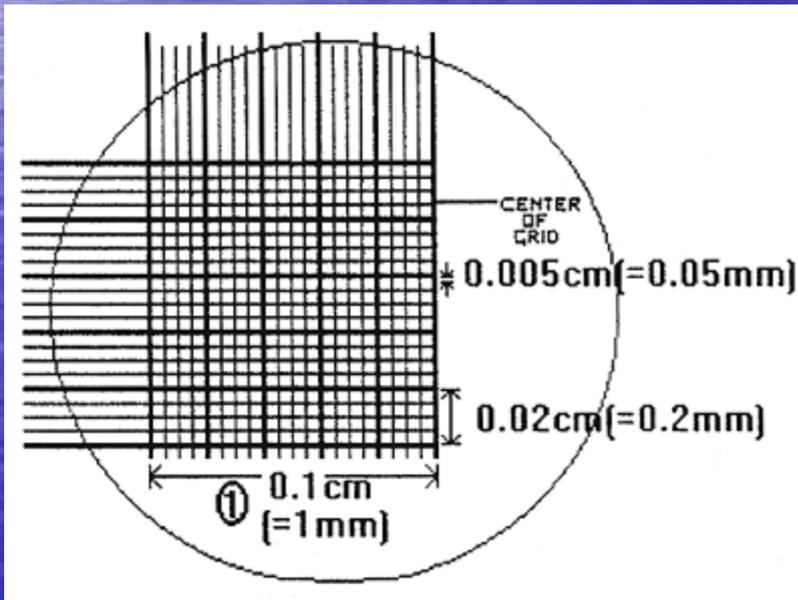


Calculating of Cultivated Algae





**Counting Chamber
(Haemocytometer)**



Nutrients used in culturing marine algae inside laboratory

- $\text{Na}_2\text{H}_2\text{PO}_4$
- KNO_3
- Fe- EDTA
- CLEWAT – 32

2 ml from these nutrients added)
(for every 1 liter of water



Nutrients used in culturing marine algae outside laboratory

- **UREA**
- **AMMONIUM SULPHATE**
- **CALCIUM PHOSPHATE**
- **CLEWAT – 32**

Sterilizations of water



**1- inside
laboratory by using
autoclave for 15
minutes**

**2- outside laboratory
by using chlorox
according to water
volume**

Algae Characteristics

نوع الطحالب

نوع الطحالب				Comparing subject	N.
Chlorella	Tetraselmis spp.	Isochrysis	Nannochloropsis spp.		
Green Algae	Green Algae	Brown Algae	Brown Algae	Related group	1
No movement	Movable	Movable	No movement	Cell movement	2
10 – 2	14 – 12	8 – 3	6 – 4	Cell size (microne)	3
Green	Dark Green	Golden	Green	Cell Color	4
29 – 25	33 – 15	Reached 30	24 – 22	Optimum growth temp.	5
25 – 17	36 – 22	Un known	27 – 25	Salinity tolerance range	6
7 – 6	8.5 – 7.5	8.6 – 7.5	8.7 – 8.2	pH	7

Keeping Algae safe inside laboratory

- It must be not polluted by zooplankton •
- Keep into pipettes or small flasks •
- Keep into refrigerator at 4 c⁰ •

**At the beginning of larvae production
laboratory reared algae transfer to out side
small ponds**

Algae moved outside laboratories



The background is a composite of four microscopic images. The top-left quadrant shows a dense field of small, dark, spherical particles. The top-right quadrant features several larger, oval-shaped organisms with a distinct green internal structure and a thin, light-colored outer layer. The bottom-left quadrant displays a collection of small, green, spherical particles. The bottom-right quadrant shows a single, larger, yellowish, oval-shaped organism with a thin, light-colored outer layer and a long, thin tail-like structure extending from one end.

**THANK YOU FOR YOUR
GOOD ATTENTION**