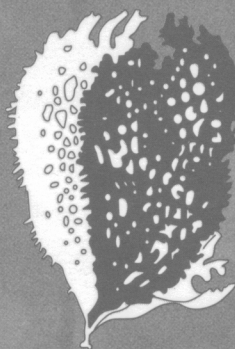


**XVIIth INTERNATIONAL  
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**SEAWEEDS: SCIENCE AND TECHNOLOGY  
FOR SUSTAINABLE INDUSTRY**



**PROGRAMME & ABSTRACTS**

Co-hosted by the University of Cape Town and Marine and Coastal Management Branch  
of the Department of Environmental Affairs and Tourism.

Quantification of nitrate in the culture media is usually complex due to the interference by nitrite. Therefore, in order to quantify nitrate in a sample also containing nitrite, one of the following two approaches is possible: either nitrite is removed from the sample, or it is co-assayed for. Several methods using the former approach (Cawse and Sulphamic acid methods) and the latter (Cadmium column method) were tested and comparatively discussed. Because of the several limitations imposed by those methods, an alternative method, based on the spectrophotometric determination of both nitrate and nitrite, was designed and tested.

- 1.4.3 Carvalho AP & Malcata FX. Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Rua Dr. Antonio Bernardino de Almeida, P-4200-072 Porto, Portugal. **MATHEMATICAL MODELLING OF THE COMBINED INFLUENCE OF TEMPERATURE AND LIGHT INTENSITY UPON GROWTH OF MICROALGAE.**  
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A deeper knowledge of the physiological responses of phytoplankton to variations in physico-chemical parameters is required in order to better understand phytoplankton ecology and thus improve efficiency of biomass production. Although the influence on growth rates of such physical parameters as light intensity and temperature is well established, the interactions among them are yet rather unexplored. Attempts to shed further light on these phenomena were carried out in laboratory scale in our group.

The growth of the marine microalga *Pavlova lutheri*, commonly used as feed in hatcheries, was studied under controlled conditions: cultures were maintained in an artificial seawater medium, while the effects of temperature and light intensity on growth were explored following a factorial design. The results obtained in terms of maximum growth rate were mathematically fitted by a second-degree polynomial, with a correlation coefficient of 0.987. Observation of the response surface indicated that the optimal conditions to enhance growth rate lie between 18 and 22°C and high light intensities; temperatures below 18 °C lead to decrease in growth rates, while temperatures higher than 22°C are not suitable for this species. Apparently, light intensities higher than the maximum tested ( $74 \mu\text{E}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ ) might even improve results. Similar conclusions were reached by fitting a similar model to results pertaining to cell numbers (in the exponential growth phase). A multiple intercomparison was also carried out by principal component analysis, which indicated a clear correlation between light and maximal cell growth rate, while the relation with temperature was not statistically significant. The addition of extra data concerning the cellular contents of carbon, nitrogen, sulphur, phosphorus, chlorophyll *a*, chlorophylls *c1* and *c2* and carotenoids unfolded relationships between carbon, nitrogen, sulphur, phosphorus and chlorophylls *c1* and *c2*, and between light and chlorophyll *a*.

- 1.4.4 Ruangchuay R\* & Notoya M. Laboratory of Applied Phycology, Tokyo University of Fisheries, Konan-4, Minato-ku, Tokyo, 108-8477 Japan. **CULTURE STUDY ON PORPHYRA VIETNAMENSIS TANAKA AND HO (BANGIALES, RHODOPHYTA) FROM SONGKHLA, THAILAND.**  
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This study focused on eco-physiological parameters as contributions to artificial culture of *Porphyra vietnamensis* Tanaka and Ho from Thailand. A combination of factors of temperature (10-30°C) with photon flux density ( $10-80 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ ); and salinity (10-40 ppt) with photoperiod (14L: 10D and 10L: 12D) on the growth and reproduction of conchocellis filament was investigated under laboratory conditions. The conchocellis had good growth at 20 and 25°C, 40 and 80  $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$  in normal seawater (35 ppt) after a month without conchosporangial formation. Early conchosporangial formation was observed in 20-40 ppt at 30°C; 80  $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$  under both photoperiods after two weeks and released conchospores at 20-35 ppt within 6-7 weeks. Conchospores cultured in various temperatures (10-30°C) at both photoperiods, 80  $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$  and normal seawater showed good growth at 25 and 30°C. Conchospores and germlings cultured in 10-40 ppt, 25-30°C and 80  $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$  revealed good growth at 20- 30 ppt. The blade phase completed in 8 weeks with liberated archeospores and zygospores at the optimum range of culture. Results from this investigation revealed that relatively low salinity and high temperature are the limiting factors on spore liberation.