## Cultivation of tropical red seaweeds in the BIMP-EAGA region

## Abstract

The Brunei-Indonesia-Malaysia-Philippines East Asia Growth Area (BIMP-EAGA) is located within the Coral Triangle, known to have the world's richest biodiversity in marine flora and fauna. This region lies within the 10° N and 10° S of the Equator where natural populations of both *Kappaphycus* and *Eucheuma* grow luxuriantly and abundantly. It is in this same region where commercial cultivation of *Kappaphycus* and *Eucheuma* began in the Philippines around the mid-1960s. Commercial farming of *Kappaphycus* (which was originally called *Eucheuma*) was successful in the Philippines from the early 1970s, after which the technology was transferred to Indonesia and Malaysia in the late 1970s. No seaweed cultivation has been reported in Brunei. At present, carrageenophytes are cultivated in sub-tropical to tropical countries circumferentially around the globe within the 10° N and S of the Equator. However, their combined production is still low as compared to Indonesia, the Philippines, and Malaysia. Notably, few improvements in farming techniques have been made since its first introduction. Some of the major improvements were the introduction of deep-water farming using hanging long lines, multiple rafts, and spider webs in the Philippines; the use of short and long 'loops', instead of plastic 'tie-tie' in Indonesia; and mechanization in harvesting and use of solar "greenhouse" drying in Malaysia. Commercial cultivation of tropical red seaweeds in the BIMP-EAGA region is dominated by *Kappaphycus* and *Eucheuma* (carrageenophytes) and Gracilaria (agarophytes) and the area became the major region for the production of carageenophytes and agarophytes globally. In particular, Indonesia is a major center for the production of *Gracilaria*. There is an increasing demand for other agarophytes / carrageenophytes in the international market such as *Gelidium* spp., *Pterocladia* spp., *Porphyroglossum* sp., and *Ptilophora* sp. for paper and ethanol production in Indonesia and Malaysia, and Halymenia for phycoerythrin pigments in the Philippines currently pursued in an experimental stage. A summary of the present status, problems, sustainability, and challenges for the cultivation of tropical red seaweeds in the BIMP-EAGA region are discussed in this paper.