
CHAPTER 1

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The genus *Sargassum* C. Agardh (Sargassaceae, Fucales) is one of the largest genus in Phaeophyta (brown alga), with over 400 described species (Yoshida 1983) widely distributed in the world oceans especially in the Indo-West Pacific and Australia with the exception of the Antarctic ocean (Nizamuddin 1961 in Phillips 1995). Species of this genus are found abundantly in the tropical and subtropical shallow marine waters.

The importance of seaweeds has long been recognized. The brown seaweeds are one of the most important primary producers of near-coastal waters (Mann 1973; Jensen 1993) and are regarded as a major global carbon sink (Smith 1981). The dominant vegetation formed by *Sargassum* species serves as an important spawning, nursery and feeding ground for marine organisms including species of commercial value such as fishes, crustaceans, shellfish and molluscs (Largo & Ohno 1992, 1993; Largo *et al.* 1994). Also, they protect the coastline from excessive erosion.

Sargassum species have high economic value as a source of alginic acid, fertilizer and animal feed especially in India (Shunula-1988; Thomas & Subbaramaiah 1991) and Philippines (Ang 1984; Trono & Lluisma 1990).

Alginates which act as a stabilizer and give structure and viscosity to aqueous solutions are the most important polysaccharides derived from the brown seaweeds. They are widely used in various industries, being the most important in textiles (50%) and food (30%) industries (Critchley 1993).

Sargassum species has been used in China for medicinal purposes. *S. fusiforme* has been used for more than twenty centuries according to the ancient literature in China for curing goiter, scrofula and dropsy (Tseng and Chang 1984). Other *Sargassum* species which have medicinal value include *S. siliquastrum* (Turn) C. Ag., *S. horneri* (Turn) C. Ag., *S. pallidum* (Turn) C. Ag., *S. hemiphyllum* (Turn) C. Ag., *S. polycystum* C. Ag., *S. henslowianum* C. Ag. and *S. vachelliamum* Grev.

Realizing the importance of *Sargassum* as a source of raw materials in food, pharmaceutical and other industries, detailed study to obtain information regarding the life-cycle, phenology, growth and reproduction are essential for its utilisation. Extensive studies have been carried out in various countries especially in India (Chauhan & Krisnamurthy 1971; Shunula 1988; Thomas & Subbaramaiah 1991) and Philippines (Ang 1985; Trono & Lluisma 1990; Largo & Ohno 1992; Ohno et al. 1987, 1995).

Malaysia has a high diversity of marine algae; however, these resources have not gained much attention. In the light of increased world demand for seaweeds and their commercial products, it is timely to focus some attention on indigenous seaweed resources. Pollution of coastal and marine environment, which has increased with the rapid construction and development for housing and tourism purposes threatens seaweed resources. A study of Malaysian *Sargassum* which is common in Malaysian waters would provide useful information for its conservation and management for commercial utilisation.

The aim of this research is to establish some baseline data on the *Sargassum* species in Malaysia. Information on the ecological and phenological aspects of *Sargassum* species in Malaysia are scarce compared to other neighbouring countries where this genus is gaining more attention because of economical value.

S. baccularia (Mertens) C. Agardh and *S. swartzii* (Turner) C. Agardh dominate the coral reefs at Port Dickson, west coast Peninsular Malaysia. The objective of this research is to study some phenological events of these two *Sargassum* species. This will be achieved through :

1. Observations on the seasonal events in the life cycle with particular emphasis on the growth rate and mean thallus length of the plants in

permanent quadrats, and the biomass (standing crop) of the plants from the quarterly destructive sampling.

2. Determination of the fertility periods and relating them to the growth rate, mean thallus length and biomass of the species.
3. Monitoring the environmental parameters and relating them to the biotic observations.