Concise reviews of seaweeds of current and future commercial interest

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The science of seaweeds (i.e., phycology, the study of algae including macroalgae) is many centuries old. Indeed, some of the earliest taxonomic names using the binomial system, as applied by Linnaeus to any living thing were given to common seaweeds (i.e., *Fucus*). The taxonomic work was soon followed by studies on their biology (structure and reproduction), physiology, ecology (zonation, ecosystem services) and distributions (phycogeography).

By contrast, the field of applied phycology is its relative infancy, only several decades old (the first issue of the Journal of Applied Phycology was published in 1989), and there has been a very significant increase in research and commercial activity in the last few years. The term “Applied Phycology” is used to convey the uses of algae and the goods and services they provide for the benefit of bacteria, plants, animals, and humans. For seaweeds, it covers aspects of the following: management of wild stocks, harvesting (sustainably), and even open water (extensive) and on-land (intensive) cultivation as well as downstream processing. Applications of seaweeds have moved from the traditional “old wives” tales of benefits to scientifically tried, tested, and validated examination of their nutritional value, bioactive components, seasonal and geographic variations, and their applications.

In short, the study of seaweeds and their uses has come a very long way in a relatively short time. Similar to land plant agriculture which has moved from basic to very technically advanced, so too has the selection of seaweeds and their cultivars/strains for use by mankind. In contrast to land plants, there are far fewer seaweeds on the menu, but nevertheless there can be a lot of information about each one.

However, much of the information about any species or a specific genus of interest is spread throughout the scientific literature. It can sometimes be very hard to find and access the early, primary literature about some materials and a studious investigator of seaweeds would need to scan and inwardly digest taxonomic, ecological, and applied science data from a plethora of journals just to get a “big picture” of the breadth and scope of studies already undertaken on a key species.

As we move to more agronomic developments of seaweeds required for producing industrial quantities of their biomass and varied extracts, it seems appropriate to utilize subject matter experts to review all available literature on key or target species. This will provide a “go to” reference point for scientists and practitioners needing to know more about particular species or genus.

This series entitled “Concise reviews of seaweeds of current and future commercial interest” aims to provide such

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short but comprehensive overviews. The reviews of individual species or genera of present or future commercially valuable seaweeds will cover the following: Nomenclature, Taxonomy, Morphology (and anatomy), Distribution (ecology, ecosystem services), Metabolism, Life history (reproduction and its controls), Phenology, Population structure, Harvesting and sustainability (or use of biomass as a seedstock for cultivation), Cultivation (intensive vs extensive), Chemical composition

(organic constituents), Utilization (basic constituents or properties to value-added products), Bioactivity of constituents.

The first of these reviews are published in this issue, and others will be published as they become available.

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