Cultivation of Gigartina skottsbergii (Gigartinales, Rhodophyta): Recent advances and challenges for the future

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Abstract

This study integrates landings statistics and biological studies of the red alga Gigartina skottsbergii Setchell et Gardner. The analysis of the landings and carrageenan production in Chile suggests that this resource will suffer a strong harvesting pressure during the next years. Biological results on sporulation, germination, sporeling growth and survivorship in laboratory, indoor tanks and field conditions, indicate that cultivation of this species is technically feasible, as spores can be seeded on ropes and other substrata. Vegetative propagation of this species through tissue fragmentation is also possible. Vegetative fragments of this carrageenophyte have 20 to 30% higher growth rates than whole fronds in suspended culture systems. Protoplast production can be also explored for bypassing restrictions in spore availability. Major advantages that encourage the cultivation of G. skottsbergii include its gel quantity and quality, its pathogen-free condition, a high reproduction potential and its regeneration capacity. On the other hand, the major constraints are related to its relatively slow growth as compared to other carrageenophytes, limited availability of spores and high mortality during juvenile stages.