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Spore culture of the edible red seaweed, *Gracilaria parvispora* (Rhodophyta)

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Abstract

A hatchery was established for the inoculation of coral chips, pebbles and lines with carpospores of *Gracilaria parvispora*, an edible market seaweed in Hawaii. Cystocarpic thalli were placed over various substrates in tanks of aerated seawater. Carpospores attached readily to substrates and after 72 h in hatchery tanks, mean spore density on slides placed in hatch tanks was 1800 cm^{-2}. Inoculated coral chips and pebbles were placed out in a seawater pond. After 18–22 weeks spore density declined to 4 cm^{-2} but 61% of substrates still had plants. Only 36% of inoculated lines developed good growth, but growth was more rapid on lines than on pebble or chips. Lines yielded two crops per year, each approximately 800 g m^{-2} (fresh weight), whereas chips and pebbles required 50 weeks growth for an equivalent harvest. Tetrasporophytes were the dominant adult stage but cystocarpic plants accounted for approximately 10% of the culture products, demonstrating that the life cycle of this species was completed within the culture system. Spore culture of *Gracilaria* allowed mass production of plants on a variety of artificial substrates but the disadvantages included the long lag period and the lower reliability compared with vegetative production methods.

Keywords: *Gracilaria*; Carpospores; Tetraspores; Culture method

1. Introduction

Gracilaria seaweeds (Rhodophyta) are raw material for agar extraction and are marketed as edible sea-vegetables in some parts of Asia and the Pacific (Santelices and

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