

**ESTABLISHMENT OF SUITABLE CULTURE SITES FOR THE PRODUCTION OF HIGH QUALITY SEAWEED (*Gracilaria* sp.) AT COX’S BAZAR**

**S. M. Atikul Alam**

Roll No: 0122/02

Registration No: 1124

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A thesis submitted in the partial fulfillments of the requirements for the degree of Master of Science in Fishing and Post-Harvest Technology

**Department of Fishing and Post-Harvest Technology**

**Faculty of Fisheries**

**Chattogram Veterinary and Animal Sciences University Chattogram-4225, Bangladesh**

**June 2023**

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**This is to certify that we have examined the above Master's thesis and have found that is complete and satisfactory in all respects and that all revisions required by the thesis examination committee have been made**

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| **……………………………………….** |  | **……………………………………** |
| (Dr. Md. Faisal)Supervisor |  | (Dr. Mirja Kaizer Ahmmed) Co-supervisor |

**…………………………………….**

**Chairman of the Examination Committee**

**Department of Fishing and Post-Harvest Technology**

**Faculty of Fisheries**

**Chattogram Veterinary and Animal Sciences University Chittagong-4225, Bangladesh**

**June 2023**

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**TABLE OF CONTENTS**

|  |  |
| --- | --- |
|  | **PAGE** |
| **TITLE PAGE**  | **I** |
| **AUTHORIZATION****ACKNOWLEDGEMENT****TABLE OF CONTENTS** | **II****IV****V** |
| **LIST OF TABLES**  | **VI** |
| **LIST OF FIGURES** | **VII** |
| **ABSTRACT** | **VIII** |

|  |  |
| --- | --- |
| **CHAPTER ONE** |  |
| 1. INTRODUCTION  | 1 – 6 |
| **CHAPTER TWO** |  |
| 2. LITERATURE REVIEW  | 7-14 |
| **CHAPTER THREE** |  |
| 3. METHODOLOGY AND STUDY AREAS | 15-26 |
| **CHAPTER FOUR** |  |
| 4. RESULTS | 27-38 |
| **CHAPTER FIVE** |  |
| 5. DISCUSSION | 39-47 |
| **CHAPTER SIX** |  |
| 6. CONCLUSIONS | 48-49 |
| 7. RECOMMENDATIONS AND FUTURE PERSPECTIVE | 50 |
| 8. LIMITATIONS | 51 |
| **CHAPTER SEVEN** |  |
| 9. REFERENCES | 52-65 |
| APPENDICES BRIEF BIOGRAPHY OF AUTHOR | 66-6768 |

**LIST OF TABLES**

|  |  |  |
| --- | --- | --- |
| SL. NO. | TABLE | PAGE NO. |
| 1 | Seaweed Culture Suitability Criteria | 27 |
| 2 | Month-Wise Water Quality Parameters (mean ± SD) of Seaweed Culture Sites, Cox’s Bazar | 68 |
| 3 | Comparison of Water Nutrients (mean ± SD) of Seaweed Bed in Monkhali and Salsa Beach of Cox’s Bazar. | 68 |
| 4 | Proximate Composition (%) of *Gracilaria* sp. Collected from Different Drying Methods | 67 |

**LIST OF FIGURES**

|  |  |  |
| --- | --- | --- |
| SL. NO. | FIGURE | PAGE NO. |
| 1 | Figure 3.1: Study Area | 15 |
| 2 | Figure 3.2: Construction and Installation of Seaweed Culture Systems | 18 |
| 3 | Figure 3.3: Different Seaweed Culture Systems | 18 |
| 4 | Figure 3.4: Seed Collection and Inoculation in the Culture Systems | 19 |
| 5 | Figure 3.5: Water Quality Parameters | 20 |
| 6 | Figure 3.6: Harvesting and Growth Performance Estimations | 21 |
| 7 | Figure 3.7: Solar Tunnel Dryer (a), Open Tray Dryer (b), and Open Net Dryer (c) | 24 |
| 8 | Figure 4.1: Month-Wise Water Quality Parameters (mean ± SD) of Seaweed Culture Sites, Cox’s Bazar | 29 |
| 9 | Figure 4.2: Water Nutrients (mean ± SD) of Seaweed Bed in Monkhali and Salsa Beach | 30 |
| 10 | Figure 4.3: Specific Growth Rate in Monkhali and Salsa Beach Area | 31 |
| 11 | Figure 4.4: Biomass Yield (Wet Basis) | 34 |
| 12 | Figure 4.5: Biomass Yield (Dry Basis) | 36 |
| 13 | Figure 4.6: Proximate Composition (mean ± SD) (%) of Collected Sample from Different Drying Methods | 38 |

**ABSTRACT**

The study conducted a thorough assessment of agar-enriched *Gracilaria* sp. production in the coastal district Cox’s Bazar, performance, and chemical composition in two distinct aquaculture systems: floating raft net culture and off-bottom long-line culture, over the period from October 2022 to April 2023. Within the Monkhali study area, a total of 69 seaweed culture plots were established, comprising 54 off-bottom long-line systems and 15 floating long-line systems. In the Salsa Beach study area, there were 32 seaweed culture plots with 25 off-bottom long-line systems and 7 floating long-line systems. These plots were managed collaboratively in partnership with local coastal communities. Throughout the cultivation period, *Gracilaria* sp. was partially harvested every 15-30 days once it reached a length of 30-40 cm. The off-bottom long-line system exhibited significantly superior average biomass production compared to the floating raft net culture system, showcasing a remarkable 699% increase in Monkhali and a substantial 445.2% increase in Salsa Beach. Furthermore, Monkhali demonstrated superior performance to Salsa Beach in both off-bottom long-line culture (542% higher) and floating raft culture (548% higher). Notably, *Gracilaria* sp. harvested from the off-bottom long-line culture was exceptionally clean, predominantly free from encrusting organisms and impurities, and featured an attractive reddish coloration. Multivariate analysis indicated that the growth of *Gracilaria* sp. was positively influenced by high salinity, dissolved oxygen levels, and nutrient concentrations, while high temperature, turbidity, and total suspended solids had adverse effects. Furthermore, *Gracilaria* sp. exhibited elevated levels of protein and lipids. This study demonstrated the potential of off-bottom long-line-based culture systems as a promising technology for *Gracilaria* sp. production in coastal regions of Bangladesh and similar geographical areas.

**Keywords:** Seaweed, *Gracilaria* sp., Biomass, Coastal areas