

Importance and Limitations of Seaweed Farming In Sri Lanka: Farmers' Perspective

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ABSTRACT

Though seaweed acts as a catalyst of social progression in bringing sustainable coastal communities, the present seaweed cultivation in Sri Lanka is at a downfall. Moreover, the exact degree of actual function as a livelihood option and the limiting factors of the system are not assessed properly. Thus, the present study attempts to identify the perceived importance and obstacles associated with seaweed cultivation. This investigation was conducted covering 160 seaweed farmers in Northern part of Sri Lanka, and a questionnaire survey, in-depth interviews and focus group discussions were conducted to collect information. Simple descriptive, analytical techniques such as frequency tables, cross tabulation and arithmetic means, and percentages were used in the data analysis. Among different livelihood activities, fishing, seaweed, and labor works respectively received higher levels of perceived importance by the farmers. Seaweed farming is perceived as a supportive agent in diversifying the livelihood options and the favorable attributes like the possibility to integrate easily with fishing, contract-growing system, a solution for deprivation of terrestrial lands, low requirement of compulsory agro -inputs and rapid return on investment were identified as encouraging features. As a simple farming technique, seaweed has the potential to expand its horizons enabling the involvement of more women. The prevalence of unfavorable weather, poor quality of planting materials, distortions in purchasing system, improper aquatic environments, poor post-harvest handling, damaged by predators, occupational health hazards and theft problem were identified as major limiting factors of the system. In conclusion, seaweed farming was perceived as an important livelihood option for coastal farming communities. The prevailing obstacles can be minimized by making adjustments in the cultivation season, offering problem related extension and training programs, introducing a flexible purchasing mechanism and establishing more collaborative actions among key stakeholders.

Keywords: Coastal communities, Livelihood activity, Perceived importance, Seaweed farming, Sri Lanka

Introduction and research problem/issue

Being an island, Sri Lanka has recently contributed to the growing significance of seaweed farming in the world. Despite the relatively higher productivity led by variety of coastal resources in the coastal belt, fishery has become the conventional economic activity of the majority, surpassing all the other agricultural aspects. The fishing effort escalates day by day due to the involvement of heavily populated coastal community and has paved to unsustainable and destructive fishing practices coupled with illegal fishery issues and communal clashes. In order to create a sustainable coastal community, especially at geographically isolated, marginalized and vulnerable locations, the creation of alternative livelihood options or sustainable livelihood options capable of unlocking the potential of oceans seemed vital. Accordingly, resettled coastal districts of northern Sri Lanka including Kilinochchi, Mannar, Jaffna and Mullative have actively involved in seaweed farming. Already in some countries

seaweed has identified as a catalyst of social progression in coastal communities, providing substantial income, while rendering extensive employment opportunities to the farming households.

On the contrary, the seaweed cultivation in Sri Lankan has experienced a downfall in its' overall performance, implying uncertainty associated with the continuation of active subscription to the economic and social environment in the upcoming years. Though seaweed is defined as an alternative livelihood option for coastal communities, the exact degree of actual function and its' limiting factors in not assessed properly. In securing and promoting this vital enterprise, a bottom level investigation on the perception of seaweed farmers as the major stakeholders is timely and nationally important. Thus, the present study attempts to identify the perceived importance of seaweed cultivation as a livelihood activity and the major hindrances of progress, in order to derive solutions to sustain the development of Sri Lankan seaweed industry.

Research Methodology

This investigation was conducted in Jaffna and Kilinochchi districts of Sri Lanka, including Walipadu Weerawil, Iranamathanagar, Chulipuram, and Nainathiv villages in Poonakary, Velanai and Islands South divisional secretariat divisions. Two stage stratified random sampling method was employed, firstly by selecting the locations and then selecting 160 seaweed farmers randomly. Structured and pre- tested questionnaire, in-depth interviews and focus group discussions were conducted to collect data. The perceived importance of farmers towards different productive activities was measured by assigning a perceived ordinal rank (Crawford & Shalli, 2007) and farmers were asked to provide their view on each perceived rank. A five-point Likert-type rating scale was used to measure the respondent's perception of major obstacles associated with seaweed farming. Simple descriptive, analytical techniques such as frequency tables, cross tabulation, and arithmetic means and percentages were used in the data analysis.

Results and findings

Among the prevailing livelihood activities, fishing received the highest perceived importance of the farmers. However, 94% of the respondents perceived seaweed as either first or second in importance. The profound effects linked to income and employment generation by seaweed farming has diversified the livelihood activities making the communities more adoptable to varied situations. Among the other causative responses, the ability to readily integrates with fishing, an alternative for deprivation of terrestrial lands for cultivation, contract growing system where the buyer assumes price risk to ensure the market for seaweed, rapid return on investment (Narayankumar & Krishnan, 2011) encountered by short production cycle and being a simple farming technique with low level of necessity for compulsory agro -inputs such as fertilizer were prominent. Additionally, this simplicity enables more women (Radhika & Gayathri, 2014), especially widowed women to involve actively with the system. Moreover, this system would be more advantageous to rural and isolated places that have lesser livelihood alternatives. However, the substitutability by better payment options like receiving a daily wage has shifted the demand for labor works receiving the third level of perceived importance

(Table 1).

Table 1. Percent rank distribution of livelihood activities

Livelihood activity	Percentage of respondents(N=160)	Total
	Perceived ordinal rank	

	1	2	3	4	5	
Fishing	65.6	12.5	7.5	0.0	0.0	85.6
Seaweed	25	68.8	6.2	0.0	0.0	100.0
Labor	5	12.5	51.2	6.3	0.0	75.0
Livestock	0.0	3.1	18.8	26.3	3.1	51.3
Trading	2.5	3.1	10.0	10.6	6.3	32.5
Farming	0.0	0.0	6.3	15.6	9.4	31.3
Government employment	1.9	0.0	0.0	0.0	0.0	1.9
Total	100.0	100.0	100.0	58.8	18.8	

Source: Primary data processed, 2016

Unfavorable weather, poor quality of planting materials, distortions in purchasing system, improper aquatic environments and poor post-harvest handling were identified as prominent obstacles affecting the system. Seasonal changes accompanied by an unfavorable monsoonal weather pattern (Mean = 4.95, Extreme obstacle) (Zamroni & Yamao, 2011), especially during heavy rainfalls reduced both the quantity and quality of harvest due to the fluctuation in water and salinity levels of seawater. Moreover, adjustments done in the time of harvesting also deteriorate the quality of seaweed avoiding the optimum stage of harvesting. The continuous application of traditional knowledge in propagation has turned down the quality of existing seed stock (4.84). Distortions in the purchasing system (4.79) such as delay in payment, relatively low farmgate price and defective weighing processes have discouraged the farmers. The existing legal cutoffs imposed on utilizing the coastal area, isolates the ideal locations for the farmers leaving improper aquatic environments (4.78) for the cultivation. Further, this was stated as a major obstacle, which daunts the farmers in managing their farming activities. Non-availability of proper quality standards (4.34) in the post-harvest handling creates the system more inefficient resulting low quality dried seaweeds. Though different kinds of value-added forms are produced internationally, the local production is confined to dried seaweed, which generates relatively narrow profit margins. Damaged by predators (3.62), especially by fish is another problem faced by the farmers. Certain exotic fish species, which invade certain areas during specific periods of the year, used to damage seaweeds. Farmers had skipped these fish threatening periods and had adjusted their cultivations, in order to mitigate this obstacle. Incidences of occupational health hazards (3.61) (Tobisson, 2013) channeling to poor health conditions due to unlimited exposure to sun light under poor working conditions were commonly identified. For instance, fatigue, eye soreness and allergies were prevalent among the farmers, causing inefficiency in terms of poor labor productivity (Table.2).

Table 2. Obstacles faced by seaweed farmers

Obstacles	Percentage respondents (%)					Mean value
	(N=160)					
	Rating Scale					
	1	2	3	4	5	
Unfavorable weather	0	0	0	5	95	4.95

Poor quality of planting materials	0	0	5	6	89	4.84
Distortions in purchasing system	0	0	6	8	86	4.79
Improper aquatic environments	0	0	6	9	85	4.78
Poor post-harvest handling	6	3	9	13	69	4.34
Damaged by predators	10	13	19	19	39	3.62
Occupational health hazards	12	10	18	24	36	3.61
Theft problem	11	12	19	26	32	3.55

1: No obstacle 2: Slight obstacle 3: Moderate obstacle 4: Significant obstacle 5: Extreme obstacle

Source: Primary data processed, 2016

Conclusions, implications and significance

As an alternative livelihood option, seaweed cultivation plays a critical role in the lives of coastal farming communities, rendering a felt impact through the diversification of livelihood options. Further, more benefits can be availed in locations such as rural and isolated areas having fewer livelihood options. Additionally, adjustments in the cultivation season with establishing an early warning system, offering problem related extension and training programs, introducing a flexible purchasing mechanism and more collaborative actions among the key stakeholders would curtail the existing obstacles.

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