

Potential of Seaweed Farming as an export product: NADeP-Hayleys-People Partnership in Killinochchi

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Limited options are available for Sri Lankans in the North as economic activities. Agriculture and fishing sectors have been severely affected by the unreliable rainfall, land degradation, coastal degradation and overexploitation of the coastal resources. Therefore, alternative income generating activities to supplement agriculture and fishing are needed. Coastal land provides an excellent environment for people to diversify their means of livelihood.

Seaweed farming is one of the opportunities which have a high potential as an alternative income generating source and employment opportunity to the people.

Seaweed farming was introduced by NADeP with Hayleys PLC in 2013 as a contract farming system. This project is carried out as a Public Private People Partnership(PPPP) in Mannar, Jaffna and Killinochchi Districts.

Seaweed is a photosynthetic non-flowering macro algae which has nearly 45 to 60 days of life span. Three major groups based on their pigmentation are observable: red, brown and green. Carrageenan is the economically valued polysaccharide that is extracted from seaweed.

Seaweed industry provides benefits for people in different ways e.g. employment opportunity for women, reduce the competition for resources in agriculture, improve trade relations with foreign markets and earn revenue by exporting etc. Environmental pollution associated is minimal.



Main issue in seaweed farming at Valaippadu in 2016

- Many project participants hesitate to continue seaweed farming despite the promise of economic returns.

The objectives of the study

- To identify the influential factors for continuation / discontinuation of Seaweed farming.

Methods of study

- Valaippadu was the village selected from Kilinochchi district.
- Sixty seaweed farmers were selected randomly for the study from 300 total beneficiaries of the area.
- Field survey was conducted using structured questionnaire and face-to-face interviews.
- This study was based on the primary data collected through household visits.
- Simple analytical techniques were used; descriptive analysis for percentage, mean values, mean comparison test and correlation between variables.
- Logistic model was estimated to identify factors contributing to continuation in seaweed farming.

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \varepsilon$$

y – Probability of continuation

x_1 – Age

x_2 – Gender

x_3 – Education

x_4 – Non-seaweed income

x_5 – Household size

x_6 – Number of time attending training session

x_7 – Attitude

x_8 – Social factor

x_9 – Marketing factor

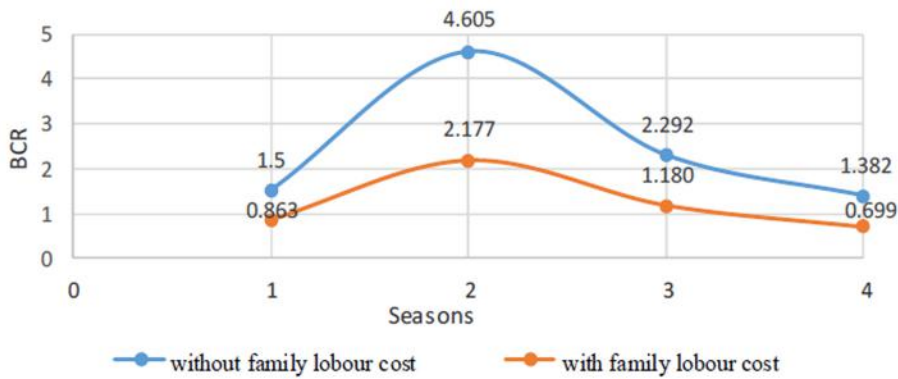
Findings

- Respondents included farmers who still continue seaweed farming and who have dropped-out.
- There were no significant differences in terms of household size and land ownership between both groups of respondents.
- There were statistically significant differences in terms of respondent age, respondent gender, non-seaweed income, and education level.
- Labour requirement of one raft is 14 human hours from site preparation to packing.

Table 1: Summary statistics of cost and return of seaweed cultivation

Items	Mean(LKR)
Revenue per household per cultivation	33,086.50
Cost per household per cultivation	18693.75
Cost per Kg per cultivation (without family labour value)	20.82
Cost per Kg per cultivation (With family labour value)	41.36
Net profit per household (Without family labour value)	19,946.15
Net profit per household (with family labour)	11,990.38

- Distribution of mean benefit cost ratio (BCR) increased from the mid to end of 2015 to then suddenly decreased in 2016 at Valaippadu. Heavy rain in 2016 resulted in lower harvests.



$$BCR = \frac{NPV(\text{Benefit})}{NPV(\text{Cost})}$$

Figure 1: Mean distribution of benefit cost ratio from 2015 to 2016

- Continuation of seaweed cultivation has positive relationship with entrepreneurial skill of the farmers and number of training sessions attended.

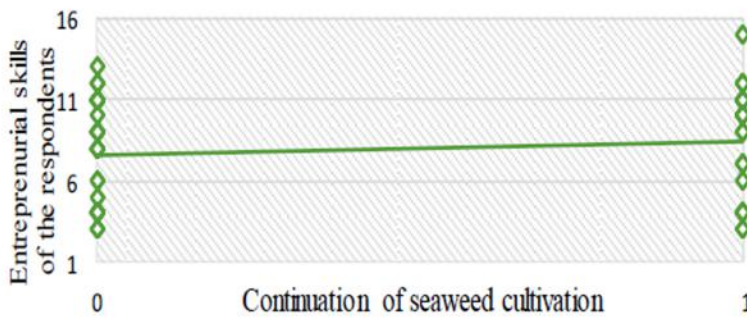
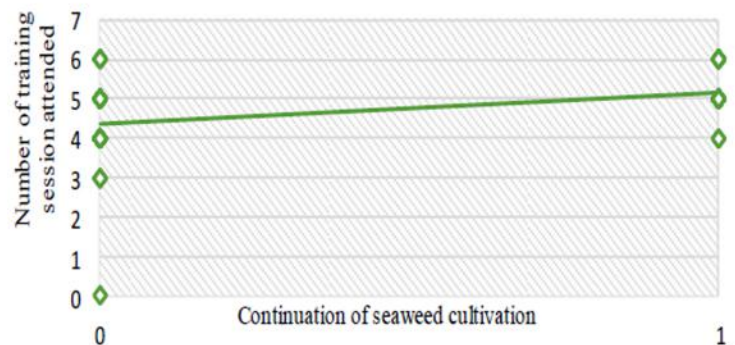


Figure 2: Relationship between continuation of seaweed cultivation and entrepreneurial skill of farmers

Figure 3: Relationship between continuation of seaweed cultivation and number of training sessions attended



- Entrepreneurial skills of the farmers increase with number of training sessions attended.
- In the logit model, the binary dependent variable is probability of continuation of seaweed farming.
- Model was estimated to check the significant relationship between variables.
- Model fit measured by the R^2 value is 0.6235.

Table 2: Maximum likelihood estimates in binary logit model

Variable	Odds ratio	Std.err	z value	P value
Education	13.314	16.900	2.04	0.041**
Age	1.041	0.059	0.70	0.486
Household size	0.669	0.263	-1.02	0.307
Monthly off-farm income	1.000	0.000	-1.69	0.092*
Respondent gender	4.114	4.268	1.36	0.173
No.of training sessions	9.218	9.214	2.22	0.026**
Attitude of farmers	3.373	1.407	2.91	0.004***
Social factors	0.886	0.429	-0.25	0.803
Marketing factor	1.289	0.669	0.49	0.624

Conclusions

- Number of training sessions attended, attitude of farmers, and education level have positively significant impact on continuation of seaweed farming.
- Respondent age, Social factors and marketing factors has insignificant relationships with the continuation of seaweed farming.
- Overall relationship between farmers and private parties is satisfactory; however farmers are not satisfied with the price of the seaweed.
- Change of the rainfall pattern and temperature were the main constraint faced by farmers over the last two years that are beyond the control of project partners.

