

**Seaweed Farming in Zanzibar:  
Empowering Women and Improving Sustainability Webinar  
Questions & Answers  
July 27, 2022**

Answers provided by George Maina (The Nature Conservancy) and Mondy Muhando (The Nature Conservancy and Ministry of Blue Economy and Fisheries Zanzibar).

*Farming Techniques*

- 1. Is there a possibility to get the training manual?**
  - a. Yes. The Seaweed Guide will be available online once completed, by December 2022.
- 2. Is the manual in Kiswahili as well?**
  - a. It is currently in English but there are plans to have it translated once the final version is completed.
- 3. How do you choose/ what criteria for site selecting especially in areas with typhoons?**
  - a. Exposure is a factor in site selection. If we adopt best siting 'smart siting' practices then the impact or exposure to strong waves and typhoons are reduced.
  - b. Very important to apply 'smart siting' principles - an approach of site selection in which various parameters, mainly physicochemical, are used to determine the suitability of an area for seaweed cultivation
  - c. Minimum recommended 'smart' siting guideline: Farms should not be established in polluted areas, in ecologically sensitive areas, in location with conflict with other users (LMMAs, fishing areas, tourism, etc.), and farms should be established in areas with suitable water quality for optimal production  
~George
- 4. Is there Seaweed need mapping zone before you plan. setting farming**
  - a. Kiting is there at Paje but there are plans on the way to map potential sites for seaweed farming  
~Anonymous
  - b. Mapping is important especially when there are plans to increase productivity and move seaweed farms to deeper water. Mapping will help estimate the size of the area with potential for seaweed production. The Ministry is working on MSP and has plans of studies on potential sites for deep water seaweed farming. ~George
- 5. What practices/characteristics qualifies a seaweed farm as "restorative" compared to "basic" seaweed farming?**
  - a. Restorative aquaculture occurs when commercial or subsistence aquaculture provides direct ecological benefits to the environment, with the potential to generate net positive environmental outcomes e.g.
    - 1) Mitigate nutrient pollution
    - 2) Provide habitat
    - 3) Enhance fish stocks
    - 4) Reduce local climate change impacts ~George
- 6. Is there a cheaper alternative to using plastic bottles as floats for seaweed farming?**
  - a. Use of plastics is a big challenge - linkage to opportunities to support partnership with recycling enterprises to reduce usage of plastic would be great.
  - b. Farmers and harvesters should avoid polluting the area with plastic debris such as old discarded ropes, buoys, plastics. ~ George

7. **Excellent project and great to see the progress. Have you thought about diversifying the species being farmed to include for example sea cucumbers and/or herbivorous fish? This could diversify the income of farmers and possibly reduce risks from changes in demand/pricing.**
  - a. Thank you! Yes- we are thinking of integrated restorative aquaculture. Will require greater/partnership and investment. It is possible. ~ George
8. **How do you cooperate with local NGOs...?**
  - a. The Nature Conservancy works with partners in impacting communities, these partners can be from academia, government and buyers in bringing positive sustainable development to seaweed farmers ~George
9. **Were there any methods that reduce ice-ice disease and how to leverage more production?**
  - a. To avoid risks of ice-ice and epiphytes farmers were trained on proper farm siting that ensures great health of the seaweeds. Sites that were not polluted, where seaweeds will at all times be immersed in water, away from freshwater inlets, and areas with no conflicts with other resource users. ~George

### *Finances*

10. **Seaweed is a lucrative business in the USA and 1kg of seaweed is valued at at least 250USD, however, the value in Zanzibar is 0.3 USD/kg, very discouraging and is not a shiny value that will cause fishers to abandon their boats for seaweed farming. What strategy the Nature Conservancy will use to increase the value of seaweed to attract fishers to join this restorative farming??**
  - a. Adoption of Best Farming Practices may help increase quality and production and hence increase bargain value. Approaches such as Participatory Marketing System being applied in Octopus closure when opened may help. ~George
11. **Merging across a few questions related to why seaweed farmers are not making enough money.**
  - a. Seaweed has value for its carrageenan uses. Most seaweed farming in Zanzibar is sold as an export raw material product. We're looking into exporting products that can be used directly for consumption. ~ Mondy
  - b. Addressing the quality issues of seaweed is important for increasing value. ~George
12. **In the past there have been some user conflicts over the area with tourism, as wind surfers in particular felt affected by the sticks of seaweed farms that could injure them?**
  - a. Resource use conflicts are common. Seaweed farms are also where fishers go or are placed in front of tourism establishments. Zoning is an issue that needs to be addressed and could be addressed at the local level. ~George
13. **What kind of marketplace exists for seaweed and how challenging is it to get the seaweed into this marketplace? We are considering doing a similar project in Mexico, but are worried about having relatively local buyers/productive capabilities to ensure it's still a sustainable project when you look at the entire lifecycle.**
  - a. The broader value chain dynamics of Zanzibar seaweed are relatively simple. Seaweed is grown and processed by farmers, and then it is collected, transported, and exported by local exporters. There are 5 to 7 active local exporters. Some of these buyers work with selected seaweed farmers who they invest in with provision of inputs and ways to make seaweed harvesting easy. The buyers collect seaweed directly from the farmers. ~George

**14. Why is seaweed farming doing best in production but poor in income generation as it is the last in aquaculture products selling in the world?**

- a. The application of seaweeds for direct consumption is minimal compared to other cultured marine resources such as fish and crustaceans, thus making markets limited. Creating more awareness on the applications and benefits of seaweed will help create the markets thus boosting demand. ~George

**15. For the environmental benefits resulting from the restorative aquaculture, were the values presented in terms of e.g., nutrient and carbon sequestration capacity, increasing fish stock, among others, locally measured? What metrics were used and how were they estimated? Are time series observations/measurements/data within farm sites vs. control/reference sites available indicating minimal environmental impacts and improved water quality due to nutrient and carbon sequestration by seaweed farming?**

- a. The environmental metrics used were: Coastal area under improved management, % utilization of mangrove stakes, Reduced plastic debris from farming inputs, Seagrasses ~George

**16. I understand that both spp cultivated in Zanzibar are for carrageenan and for industry. Is there already identified scope for cultivation of other spp that would be easier to value? (e.g. with shorter value chain/end consumer?)**

- a. There have been studies for cultivation of Gracilaria species which can be used for the production of agar, but there are no well-established markets of this species in Zanzibar.
- b. There are other interests for exploitation of wild seaweeds such as Ulva and Sargassum but still studying the possibilities for sustainable culture and considering bio-security ~George

**17. Market Market Market...The price is very low.. there is a need to find a way to promote seaweed price**

- a. Most seaweeds produced in Zanzibar are exported dried seaweed with 1% of the production being used for local value added seaweed products.
- b. Market analysis to clarify opportunities for carrageenan production in Zanzibar is one of the areas of opportunities in developing the seaweed industry in Zanzibar.
- c. R&D efforts within the spinosum derivatives (juice) industry to sell seaweeds in derivatives forms that are more valuable or can directly be consumed. ~George

*Climate Change*

**18. What are some of the recommendations in regard to susceptibility of seaweed to climate change and the cultural barriers to deep sea aquaculture (challenges to women).**

- a. Restorative aquaculture has the potential to produce multiple types of climate mitigation benefits. While the water quality and habitat benefits of seaweed and shellfish aquaculture (which may be considered climate adaptation) are relatively well-supported within the scientific literature, the climate mitigation benefits of these types of aquaculture are currently less scientifically supported. ~ George

**19. Is anyone studying the impacts or benefits of farming on adjacent reefs - presumably N-removal and possibly larval enhancement could be very good. Not clear if CO2 reduction would have localized reduction in acidification? Any influence on coral bleaching response?**

- a. Great Question for researchers in the House - Impact Evaluation... we invite partnership on addressing this Q. ~George

**20. How will seaweed farming help to change the impact of pollution in the Zanzibar area?**

- a. Seaweeds are known bioremediators. They take up excess nutrients from the water making them restorative aquaculture. May help to reduce the pollution in the waters ~ Mondy

- b. Part of restorative seaweed aquaculture is proper siting. Making sure that seaweed is not sited near areas of pollution. Coming up with a national level marine spatial plan would help to make sure there are not conflicting uses of spaces. ~George

**21. Can seaweed farming reduce impact on climate change and what have you done so far in relation to this in Zanzibar?**

- a. Researchers have found that seaweed is in fact the most effective natural way of absorbing carbon emissions from the atmosphere. During training, farmers were taught of this seaweed's as well as other ecosystems (seagrass, mangroves and coral reefs) vital role in absorbing carbon.
- b. Studies of use of seaweeds for carbon sequestration are in the plan. ~George

**22. Are there any (attempted) efforts (either research or practice) to utilize seaweed in Zanzibar for blue carbon sequestration? Any policy hinderances so far, if any?**

- a. Exploration of seaweeds for blue carbon sequestration in Zanzibar has not yet been done. There are no policy hindrances on the matter. The researchers have this in their plans, we hope soon there will be studies directing us to how best to apply carbon sequestration in Zanzibar. ~George