Title: Transforming food systems with aquatic foods: Scaling up sustainable production solutions
Date: Thursday, 20 May 2021
Time: 19:00-20:30 (UTC+8)

Answered

1. **Thanks for the initiative! I would like to know whether FAO is part of the network and how you would see it playing a role in fostering the transformation of blue food systems, given its long-standing work on fisheries and aquaculture?**
   Thank you for your question. FAO has been actively partaking in the network. FAO plays a vital role in transforming the blue food systems due to its essential role in developing tools for sustainable fisheries management approaches and aquaculture development and improvement of the contribution of aquatic foods to food security and nutrition, helping to facilitate relevant policies and strategies, including by being a source of data, e.g., SOFIA report as well as analytical data on the nutrient content of aquatic foods. Implement FAO tools, such as the Code of conduct for Responsible Fisheries and voluntary guidelines for small-scale fisheries (VGSSF), will increase the contribution of fisheries to food security. This question was also answered live during the event. View it here: https://youtu.be/o1JeXYptWng.

2. **Why Farmers and Fishers have to pay to get their fish certified? Why the premium given by consumers not transferred to producers? Is there any way the certification systems can address this issue faced by producers?**
   Thank you for your question. VSS is, to a large extent, private initiatives, hence the need to pay for certification. What is needed is that we provide small fisher the necessary resources so that certification does not become a barrier to trade or sustainability. My opinion is the need for more dialogue and transparency on this issue to provide more support to small producers.

3. **Thanks, Santiago. Do you think blockchain technology might be of use for the mentioned desired traceability?**
   Thank you for your question. Agree with you on blockchain technology as an instrument to enhance traceability. It is also a technology used in a couple of supply chains. We already have examples of coffee and cocoa production.

4. **How do you integrate these small producers in the large-scale feed production needed to produce enough fish, meat, egg, and milk for cities?**
   Thank you for your question. Now, we are working on small-scale feed production only. However, the idea is to scale it up.

5. **Very interesting to use food waste to produce Black Soldier Fly larvae to use as feed for fish, etc. Have you managed to make the BSF production financially feasible to make it comparable to existing feed options?**
   Thank you for your question. The Black Soldier Fly larvae is still a small-scale initiative. However, we have observed the smallholder farmers can reduce between 15-20% of the feed costs.

6. **Thanks, Karol. In terms of BSF production, have you solved the problem of scaling up production using thousands of tons a week of organic waste from urban environments?**
   Thank you for your question. This question was answered live during the event. View it here: https://youtu.be/o1JeXYptWng.

7. **What have you found as the maximum inclusion level of insect protein in practical fish diets for the insect larval project? What are the significant anti-nutrients that need further assessment?**
   Thank you for your question. The level of BSF inclusion depends on the fish species. However, it has been observed that the inclusion is between 30-50%, being higher in high protein requirements fish, like trout.

8. **Can Karol address whether the fish have been evaluated for their nutritional content to determine whether they have the same protein and micronutrient content when fed on this insect diet?**
   Thank you for your question. Indeed, several papers have found that the fish's nutritional content is similar or even better with insect diets than with traditional diets.

9. **With respect, black soldier fly production to feed live or as a meal is not necessarily straightforward to carry out in a financially viable way – especially for small scale lower-income people – the breeding cycle/ broodstock of the flies is a specialized skill and activity.**
   Thank you for your question. The breeding BSF cycle is a pretty specialized activity. However, our conditions have allowed us to rear this species a bit easier than in artificial conditions. We could have better economic inputs if we produced on a large scale. However, we have found the small farmers can reduce a bit the feed costs. You can see this in Kenya.

10. **Can we hear examples of nature-based solutions implemented in Lake Tanganyika?**
    Thank you for your question. This question was answered live during the event. View it here: https://youtu.be/o1JeXYptWng.

11. **How is climate change factored in the initiatives that were undertaken so far?**
    Thank you for your question. We establish community-based institutions that show small-scale community-based protected areas commonly known as Fish breeding sites - these are spawning and nursery grounds protected by the local community themselves. Community institutions called as BMUs collect catch data and inform the government. TNC helps these communities to demarcate these FBS. Happy to discuss further on this.

12. **Thanks for the interesting information. At NIRMAN (www.nirmanodisha.org), we are working on subsistence, small fishery. In this context, I would like to know if we can have a simple, community-friendly formula for sustainable fishery irrespective of the ecosystem.**
    Thank you for your question. We have a model for the establishment of local institutions. I will be happy to share more if need be. My email address plimbu@tnc.org.

13. **To Peter Limbu, an issue with some seaweed is the assimilation of heavy metals. Is this something you can test? This is especially relevant for use to consumption and feed.**
    Thank you for your question. Please feel free to reach out at plimbu@tnc.org.

14. **Thanks, Peter. The marine environment is often polluted with heavy metals and other contaminants. Sometimes marine algae bioconcentrate some of these contaminants – do you see this as a problem when scaling up production?**
    Thank you for your question. We haven't heard of heavy metals on the coast of Tanzania, and probably it will worth studying that if no studies at all.

15. **Thanks, Peter. What are the significant challenges Tanzania faces at the starting phase of seaweed culture promotion? We want to use your experience in India. Thanks.**
    Thank you for your question. Culture has been a hindrance to many conservation initiatives. But women and some youths are being positive as awareness improves. So the major challenge is still low price, intrusion of freshwater, harvesting boats, lack of swimming skills for those who are farming in deep water. Most of these challenges are addressed by training on Best seaweed farming practices. This question was also answered live during the event. View it here: https://youtu.be/o1JeXYptWng.

16. **Which are the main markets for seaweed exports and in which form or type is exported.**
    Thank you for your question. In Tanzania, some local buyers and developers buy directly from the farmers and support farmers with input supply. The government is encouraging investors to come to Tanzania to work in the seaweed industry.

17. **Thanks, Peter. Are there strategies being pursued by your organization to promote local seaweed consumption and strategies to engage commercial companies to produce seaweed? Thanks.**
    Thank you for your question. Yes, TNC collaborates with the government and stakeholders to encourage local consumption, and some communities are doing that. However, more initiatives need to be taken by showing the benefits of seaweed as food in the middle of all other aquatic foods.

18. **Thanks, Tanja. Does Hatch work on crop insurance systems linked to micro-finance and technological solutions?**
    Thank you for your question. No, we have not (yet) done that. But fascinating if you could forward more thoughts on this to tanja@hatch.blue.

19. **Prof Karol, do insects have appreciable levels of omega-3 fatty acids in addition to protein, by any chance? Thank you.**
    Thank you for your question. BSF larvae do not contain high levels of these fatty acids. However, they can incorporate them through the diet. That's why BSF larvae's substrate is essential.

20. **I would like to know if Professor Karol and her team in Africa promote the production and use of insects to improve fish farming. Are support schemes for African countries that you can extend to help convert waste into helpful food for fish and other animals? Thank you.**
    Thank you for your question. Professor Marcel Dicke from Wageningen University is the coordinator of the Kenyan project. Yes, they have several papers where you can find their experience, not only on fish but poultry and pigs.

21. **How does Hatch become involved in new innovative programs to ensure future sustainable programs?**
    Thank you for your question. We get involved where we can find partners that share our passion for supporting and scaling new solutions. This can be funded by public-private partnerships or through our investment fund. We are very open to expand our global footprint, and please forward an email to tanja@hatch.blue to explore possibilities to work together.

22. **Thanks, Karol. We worked with small-scale fish farmers in Ghana on two projects setting up BSF prod facilities.**

Thank you for your question. It is nice and interesting the BSF is helping many smallholder farmers. I'd like to know your experience.

23. **Question for Peter: What is the mean issue of seaweed farming in Tanzania? And could you let us know as well the impact of this activity in the zone, please? Thanks.** Thank you for your question. Production is going on well. However, there are needs for capacity building on BMP of seaweed farming. Challenges to farmers include low prices and local-based requirements such as transportation vessels for farmers, swimming challenges, inputs materials.