Title: Promoting Climate-smart Aquaculture Systems
Date: Thursday, 27 January 2022
Time: 19:00-20:30 (UTC+8) / 13:00-14:30 (UTC+2)

Audience Questions and Answers

1. **Can aquaculture be integrated with trees – 'aquasilviculture'?**
   Yes, it is possible. There are many experiences in Asia and the rest of the world.

2. **Respected, please share the initial costs and investment need move to low carbon aquaculture along with agriculture and share the various variants of Tilapia for sustainable development?**
   The initial investment depends on many factors, such as target yield, which is linked with market demand, resource availability and many other factors. It can be a simple investment as digging water storage tanks, which can be used for fish farming, and effluent water, which can be used for irrigating the crop.

3. **How is pollution control managed in the ponds in case agrochemicals are used to grow vegetables?**
   The principle of IAA is that fish waste and feed remain, which are rich in ammonia, flow with pond effluent to fertilize crops. Practical experience showed that this process can save on average 50% of plant fertilizers requirements.

4. **Under Aquaponics in Egypt, are you using locally based crops? What are they?**
   Aquaponic in Egypt is growing (Lettuce) and leafy vegetables, which utilize nitrogen fertilizers produced by fish.

5. **Is the Keram system feasible at a small-scale level? Any estimation of basic capital for a start-up?**
   This depends on the level of technology to be adopted and the target production volume.

6. **How do we get to buy the books?**
   For Dr. Abdel Fattah's book, you can contact him directly through his email (afmelsayed@gmail.com). For the IAA material, WorldFish offers this publication open access and you can contact us for advice as needed.

7. **Are the integrated systems being adopted by farmers rapidly? Why or why not?**
   In the Desert area, the integrated system was adopted over around 10 years by many farms as the system allows to produce animal protein from the same water units and reduce fertilization cost for crop.

8. **How can the IPRS be customized using locally available materials, so that a local farmer benefits?**
   We are supporting the use of local materials in developing IPRS to reduce construction costs and domesticate the technology.

9. **Do you have a plan for the construction of IPRS in Ethiopia?**
   This is on our agenda, but we need to make sure electricity is available on the farm site. Our partner in Ethiopia, BDU, do not recommend going to IPRS at this stage as electricity can be a problem.

10. **In IPRS, can another crop (animal/plants) be grown using the 'empty' water body, i.e., the area of the pond where there is no fish?**

Yes, crops can be grown on floating try. This will utilize nitrogen waste from fish. We are trying to make this a module in Abbassa.

11. **The IPRS is a good innovation but how can it be adopted in rural Africa where there might be inadequate energy supply to carry out aeration?**
    You are correct, the first checklist of site selection is the availability of electricity and having an alternative standby source.

12. **The biggest challenge in Ethiopia is the lack of fish feed. How to overcome this?**
    There is an international feed company operating in Ethiopia, which produces good quality feed. Further in small farms, the local fish feed can be formulated.

13. **I would like to understand the cost of putting up the simplest IPR system?**
    What are the target production capacity and volume of water available on your farm?

14. **Harvest in 4 months at what size in terms of KGS?**
    The market size of tilapia is 350 g/fish. We achieved more than 65kg fish /m3 of IPRS cell.

15. **Could there be any tilapia species other than Nile tilapia that has been experimented with in the Keram and other systems? Invasive Nile tilapia is restricted in some regions of Zambia.**
    So far, we are working with Nile tilapia species. Other countries produce carp and catfish.

16. **Thank you very much Prof. Nasr-Allah. I'm wondering if you can give more information about the aeration system and water cycling instruments in detail?**
    Please communicate with me (a.allah@cgiar.org) and I will share lectures and videos about the aeration unit as presentation time was limited.

17. **In Ethiopia, aquaculture is not a well-developed sector. While it has huge potential, it also has various problems, either environmental or policy. One of the environmental problems is climate change for fluctuating weather conditions. Is there any country experience on how to mitigate the impact of climate change on pond fish farming?**
    This can be directed to Dr. Minwyelet Mingist (minwyeming@gmail.com).

18. **Is it possible to employ IPRS in small lake ecosystems as opposed to cages? Thinking of Lake Naivasha in Kenya?**
    Yes, it can work well as long as electricity exists. Floating IPRS can be less impactful on the environment than cages due to continuous removal of waste.

19. **Do you stock any other species than tilapia in IPRS, Dr. Nasr-Allah?**
    Yes, we stock mullet or silver carp in an open area of the pond.

20. **How much (in wt) fish do you stock in outside raceway as service fish, Dr. Nasr-Allah?**
    I would recommend 1 fish of mullet or silver for every 3-4 m3. These fish should not be fed to allow them to eat system remains of feeds and organic material.