

TEKNOFEST

AEROSPACE AND TECHNOLOGY FESTIVAL

AGRICULTURAL TECHNOLOGIES COMPETITION

PROJECT DETAIL REPORT

PROJECT NAME: Endless Food System

TEAM NAME: Survivors

TEAM ID: T3-14226-187

TEAM LEVEL: Junior School

TEAM MEMBERS: Syed Musa Bin Hassan

ADVISOR NAME: Sadia Shahzad

Project Detail Report

1. Project Summary:

Water pollution is one of the huge problems faced by the environment. It is not only affecting the food production but it is also causing several problems for marine life. With every passing day, due to lack of nutrients in soil plants are not growing properly and they have zero nutritious value. Our device grows both fishes and plants side by side providing both the species with clean and nutrients rich water that allows their better growth without any water loss.

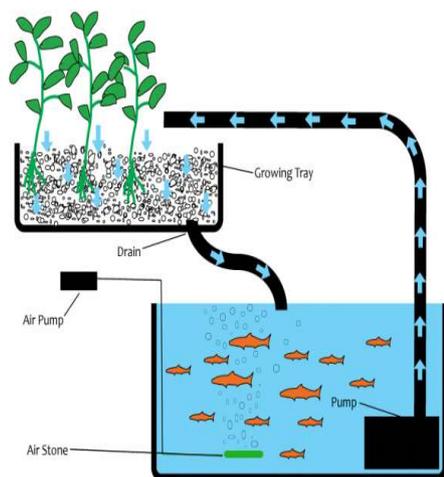
2. Problem/ Issue:

Issues like water pollution causes inefficient growth of plants and fishes. Techniques like hydroponics and aquaculture are not only **expensive** but they also require extra processes like filtration to purify the used water which in addition are **costly**. Similarly these methods require **clean and large amounts** of water which may not be available all the time.



3. Solution

I am presenting a mechanism that provides a solution to the problem as it allows the growth of two different crops at the same time. It uses the same water for the production of two crops. There is no need for a separate purifier for the water. This system provides ammonia rich water to plants by the fish tank and the plants convert the same water into oxygen rich water which is supplied to the fish tank in return with zero loss of water. This system can be used to produce a variety of edible plants and any type of fish. In this mechanism the plants are grown without any pesticides or fertilizers in non-traditional locations. It also controls several factors like temperature, pH, micro and macro-nutrients, oxygen and sunlight photo period. This system provides healthier crops of both fishes and plants. It allows the fishes and plants to grow in a clean eco-friendly environment without any pollution. This system can be made at industrial and domestic level with ease and little expense. It can be the key to a sustainable future.



4. Method

To make this system we used the techniques of hydroponics and aquaculture. We combine two tanks containing our two different crops (fishes and plants). The two tanks are connected with water pipes and a small water pump is also attached in between. This pump pushes the water between the two tanks. In this way the water circulates between the two tanks. The fishes add nitrogen and carbon to the water which reaches the plants in return the plants provide the fishes with oxygen rich water. It is a highly unique and efficient method.

5. Innovative Aspect

It is the **14th goal in the list of 17 sustainable development goals (SDG)**. Our system enables farmers to grow plants and fishes at the same time without any restriction of location on any scale. This system can be used to grow several edible plants (herbs, salads) and all types of fish. This system produces **healthy organic crops** of plants than typical farming. It also uses **minimum energy and maximum output**. It is a very **low cost project** as we have used things available at home to assemble this system.



This is a portable system, It only needs :two plastic containers, aerator, Fish of any species, granite stone or organic granules for plant bed.

6. Applicability

This system can be introduced in any country and its use can promise healthy crops. This system is the perfect solution to problems of soil infertility and water pollution. Our system is an efficient one which requires low energy and it needs no manual purification as it operates self purification. It will provide a true foundation for a sustainable future and lead to a nation's progress. It is the **cost- efficient, productive and easy solution to the increasing environmental food issues.**

7. Estimated cost and Project Scheduling

Components	Price\$ USD
Aerator	5\$
Fish Any Species/Fish Feed	5\$
Granite Stones/ organic Granules	2\$
2 Plastic containers	2\$
Plant Sprouts	1\$
Total cost	15\$

Hence the total cost of Endless Food System is \$ 15 only which is very cheap.

Our project is made up of very simple parts which do not need much time for scheduling and assembling. After our project is approved we will start our procedure by setting the plastic containers to make half of our setup. Our project will start working in no time as very simple parts are being used. Moreover, our aquaponic system is already in market but those cost a lot and are complex as well.

8. The Target Group of Project Idea (Users): This system can be introduced in every country especially the one's facing the issue of soil infertility (e.g. Africa) and the countries which have access of water (e.g. turkey). This project can be practiced at domestic as well as industrial level to increase the per capita production of both fishes and plants. This project is the basis of a sustainable future for the world hence, very useful for serving humanity.

9. Risks

As I have mentioned earlier this project is a **simplest way of producing endless food** so, the chance of any kind of problems or risk is not there. I have not used any complex kind of electrical components so, my project is **risk free**. Only Aerator is being used which uses very

less energy. It can malfunction but it is very less likely to happen. All the parts used are easily available everywhere.

But if it does not work I have a **Plan B**, I can make two types of these systems with same components in a matter of no time. Moreover, there is negligible chance that it may not work as it is a simple and portable system.

10. Project Team: Survivors

Project Manager: Sadia Shahzad

Team Member: Syed Musa Bin Hassan

Name Surname	Mission In The Project	School	Project or problem related experience
Syed Musa Bin Hassan	Explanation & Working	PakTurkMaarif International Schools	No

11. Resources

In order to understand the concept of Aquaponics and its effective working I read articles and information from websites such as;

<https://aquaponicsassociation.org>

aquaponicsthewayofthefuture.weebly.com

university.upstartfarmers.com

en.wikipedia.org

For assembling my project I took help from some youtube videos

<https://www.youtube.com>

Aquaponics

