

WHAT IS AQUAPONICS?

Aquaponics is a method of growing plants and raising fish together in a closed-loop system. Fish waste provides nutrients for the plants, and the plants filter and purify the water for the fish, creating a mutually beneficial relationship.

KEY COMPONENTS OF AQUAPONICS:

1. **Fish Tank:** Home to fish that produce waste, providing plant nutrients.
2. **Grow Bed:** Where plants grow, taking up nutrients from the water.
3. **Water Pump:** Circulates water between the fish tank and the grow beds.
4. **Filtration System:** Keeps the water clean and ensures the fish remain healthy.



INTRODUCTION TO AQUAPONICS

A Sustainable Farming Solution



WASHINGTON STATE UNIVERSITY
EXTENSION



www.sare.org

BENEFITS OF AQUAPONICS:

- **Water Conservation:** Uses up to 90% less water than traditional farming.
- **Sustainability:** Combines aquaculture (fish farming) with hydroponics (soil-less plant farming).
- **Reduced Environmental Impact:** Less fertilizer use and no need for soil.
- **Efficient Space Use:** Can be used in small areas, such as rooftops or greenhouses.
- **Organic Produce:** No pesticides or herbicides are needed.

SYSTEM TYPES, PLANT/FISH CHOICES

Types of Aquaponic Systems:

1. **Media-Based Systems:** Plants grow in a medium like gravel or clay pebbles.
2. **Nutrient Film Technique (NFT):** A thin layer of water flows over plant roots, providing nutrients.
3. **Deep Water Culture (DWC):** Roots are suspended directly in water, typically in floating rafts.

Plants and Fish Choices:

- **Common Plants:** Lettuce, spinach, basil, kale, tomatoes, cucumbers, peppers.
- **Common Fish:** Tilapia, catfish, trout, goldfish (ideal for small systems).



CONSIDERATIONS FOR SUCCESS:

- **Water Quality:** Regular monitoring of pH, temperature, and nutrient levels.
- **Fish-to-Plant Ratio:** Ensuring the right balance of fish and plant numbers.
- **Maintenance:** Routine checking of pumps, filters, and fish health.

WHERE AQUAPONICS CAN BE USED:

- Urban environments
- Educational institutions
- Community gardens
- Commercial greenhouses.

