

A Study of Aquaponic Systems

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Effects of Agriculture

Environmental Impact: Fertilizers and pesticides cause algal blooms in water sources which deplete oxygen reserves

Health Impact: Food generally travels 1,500-3,000 miles before reaching the table. Air pollution caused by food transportation causes an estimated 2,400 deaths due to asthma in California annually.

Financial Impact: Raising costs of fuel and fertilizers lead to an average of \$15 Billion in farm subsidies a year. An additional \$90 Billion is expected to be spent in the next decade.



Benefits of Aquaponics

Aquaponic systems are not bound by water, soil, or temperature constraints when other forms of agriculture are.

The recirculating systems conserve over 90% of the water in the system.

The need for synthetic fertilizers is eliminated. Systems can be placed in temperature controlled buildings or greenhouses

Systems can be placed on the edge of cities and provide an opportunity for more food to be grown locally.

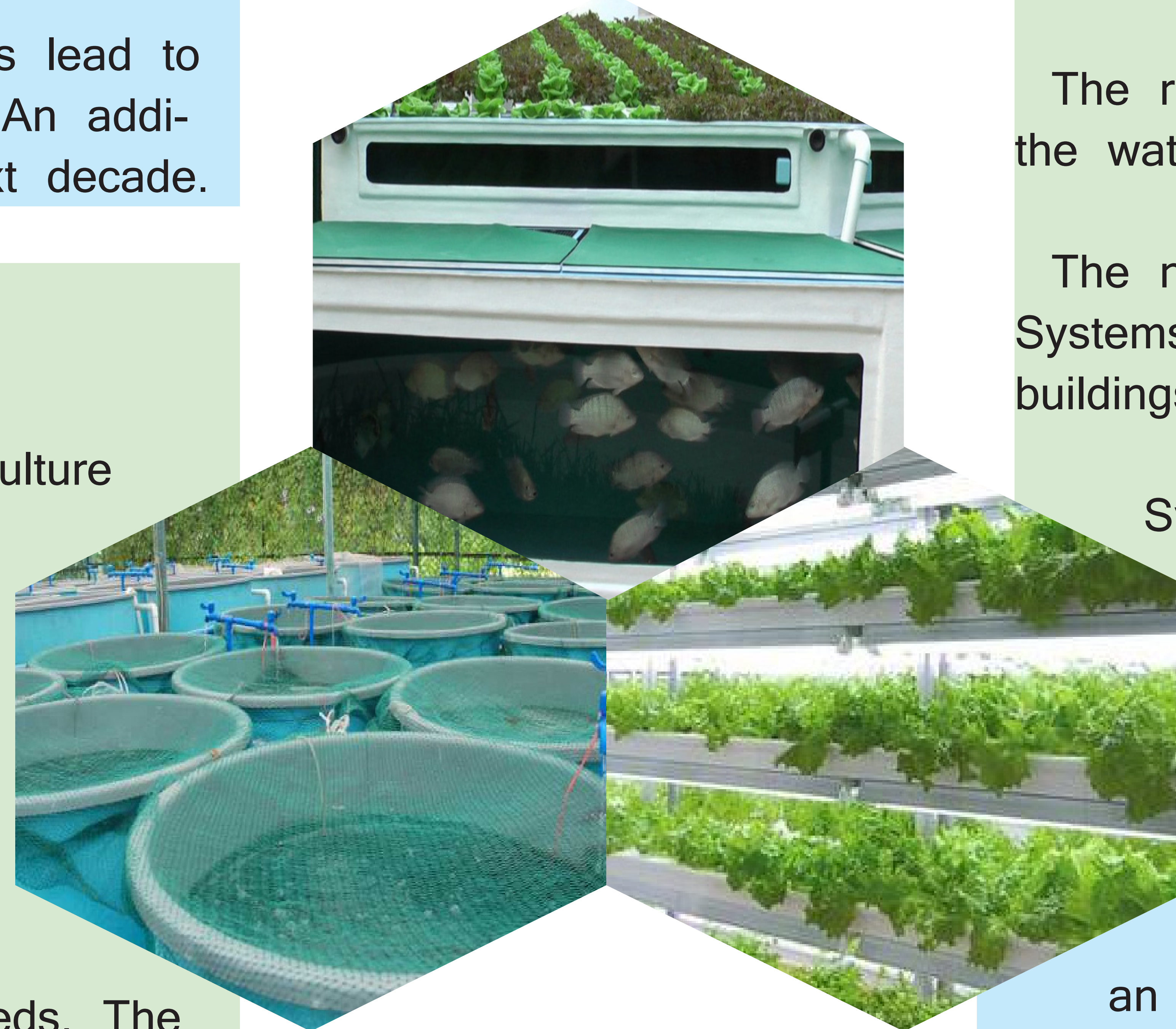
Aquaponic Systems

Aquaponic systems combine hydroponics and aquaculture

Aquaculture is the farming of fish in tanks or enclosed areas in a water source.

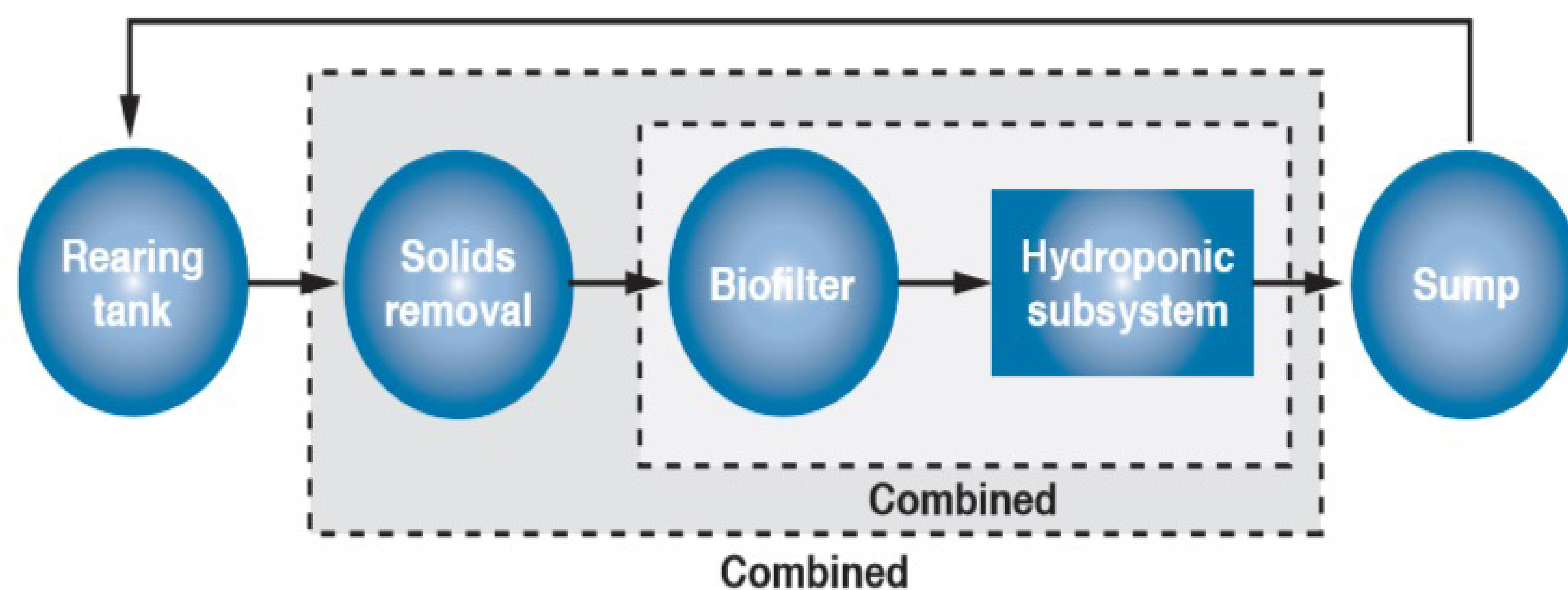
Hydroponics is a method of growing plants in nutrient rich water, there is no need for soil.

Water is circulated between fish tanks and plant beds. The two organisms support each other, the fish provide nutrients for plant growth and the plants clean the water for the fish.



Case Studies

The University of the Virgin Islands built an aquaponic system that contains a total of 2,060 gallons of water and produces roughly 10,000 pounds of fish in an area that holds the same amount of water as approximately 70 bathtubs. The system also contains 2,303 sq.ft. of space for growing lettuce. The aquaponic system produces twice as many heads of lettuce than Kestler Farms, a certified organic farm in Vermont, but on only 5% of the land area.



AQUAPONICS BASIC DIAGRAM

