**Hydroponics**

Hydroponics is the practice of growing plants without soil. Most commonly, hydroponics cultivates plants in nutrient-rich water, although hydroponics can also be considered to be the practice of growing plants in other aggregates, such as a soil-less bark-based mix. Hydroponics is an advantageous method of gardening both for home and commercial use. There are no weeds to deal with, and hydroponic plants are typically more healthy, mature earlier, and use less space.

In addition, because it is entirely water-based, it is possible to fully automate a hydroponics system, so if the gardener is absent for an extended period of time, the plants will not suffer. The water is typically reused, as opposed to traditional farming methods where much water is lost through evaporation or runoff.

In an indoor hydroponics system, plants may receive sunlight through artificial means such as grow lights. Another consideration for indoor hydroponic gardens is air circulation. This prevents fungal diseases and allows the plants to draw out the necessary carbon dioxide they require.

1. What are some benefits of using hydroponics?

2) In what situations do you think it would be beneficial to use hydroponics?

**Aquaponics**

Aquaponics is the combination of Aquaculture (fish farming) and Hydroponics(soil-less growing of plants).It combines fish and plants in a "closed" integrated system. Closed means that there is no water loss - so Aquaponics is a very water efficient way of growing plants and fish, requiring only one tenth the water!

Fish wastes in the water are converted by beneficial bacteria to nutrients (plant food). Plants then use the nutrients to grow and clean water is then returned to the fish tank. The fish, plants and bacteria create a mutually beneficial relationship where the only input needed is to feed the fish and top up the water.

In Aquaponics you try and create a balanced eco-system - where the fish and the plants are in a balance. If you have too many fish, then the plants will not be able to extract enough of the nutrients and clean the water, if you have too many plants, then there will not be enough nutrients in the water for all of the plants. That may sound difficult to achieve, but it is easier then it sounds!

1. How does aquaponics differ from hydroponics?

Notes on urban farming:

1. Which of these methods do you think would be the most effective in changing our food system to more sustainable practices why?
2. Which do you think would be the least effective? Why?

**Homework:** Find an example of a hydroponic, aquaponic or urban garden in New York City. Research where it’s located, who started it and what they grow.