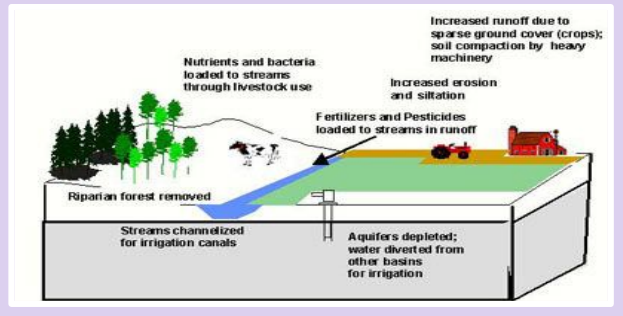
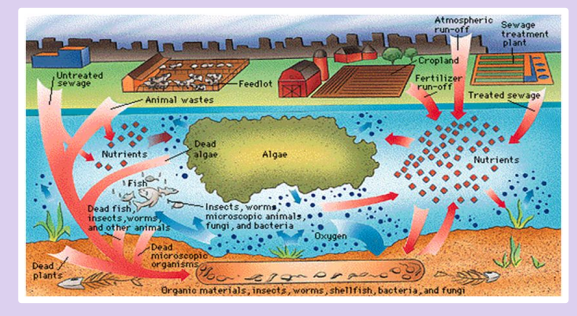


Pros to Using Fertilizer

- Helps produce more reliable and predictable yields
- Can optimize the pH level of the soil
- Causes less soil erosion



Fertilization 101



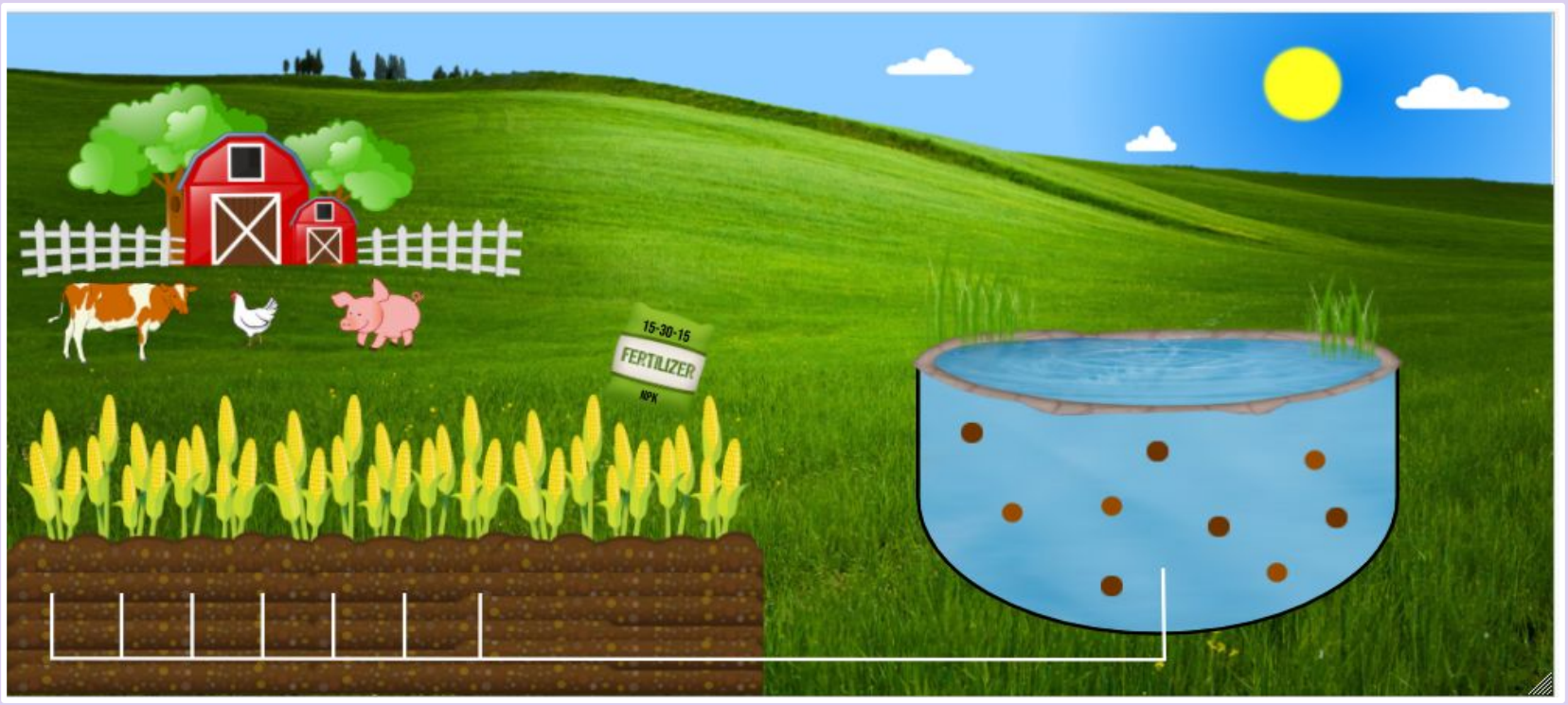
- ### Cons to Using Fertilizer
- Can lead to groundwater and soil pollution
 - Can harm microorganisms living in the soil
 - Causes alterations to ecosystems
 - Harmful to elements in the food we eat

The Problem with Fertilizer

When people think about fertilizing crops they don't really think about the negative effect it has on the water life, most people don't even know the two connect. Fertilizer can affect local watersheds depending on the fertilized waters runoff. If added to bodies of water, it can change the concentration of chemicals damaging those ecosystems. This situation is going to become a big problem and kill and/or cause extinction for some water life organisms, and here's why. You have your normal farmer, this farmer fertilizes his or her plants. They water the plants they continue to grow with sunshine, but what you don't realise is that when the farmer waters these plants excess water still has to go somewhere. That place is streams and rivers with innocent animals in them. Too much fertilizer on plants can damage organisms. Though fertilizer is good from plants it is not for some of these water life creatures, it affects their whole food chain. If this continues at large rates eventually, this could affect the whole world's food chain. See photo on the top right.

What is Fertilizer Made Out Of?

Fertilizer is a mixture of nitrogen, phosphorus, and potassium. Fertilizers provide plant with the nutrients they need. Fertilizers provide essential nutrients to plants. When plants get the nutrients they need, they begin to grow. Most fertilizers contain three minerals - NPK. The acronym NPK refers to nitrogen, phosphorus, and potassium. Fertilizers consisting of these nutrients have the label 15-30-15, meaning that 15% of the mix is nitrogen, 30% is phosphorus, and another 15% is potassium. Some fertilizers have "S" on them, meaning that sulfur is a major component of the mix.



Can Fertilizer Affect Local Watersheds

Fertilizer can affect local watersheds depending on the fertilized waters runoff. The fertilizer you use, will most likely get into the nearest stream or lake if the soil does not absorb it all. Some soil contains high levels phosphorus and there are sources of phosphorus in stormwater runoff. When decomposed residue runoff into freshwater it speeds up the growth of algae in a marine ecosystem found in these fresh waters. Although it might not seem like a bad thing, helping algae grow has its pros it also has its cons. Algae die off faster, and as the algae decompose it lowers the amount of oxygen found in the water, lack of oxygen means that the other species underwater die off faster.

How Does The Application Of Fertilizer Affect Plant Growth & Crop Yield

Fertilizers provide essential nutrients to plants. When plants get the nutrients they need, they begin to grow. While express fertilizer alters the soil creating too high of a salt concentration that in most cases it hurts beneficial soil microorganisms.

What is Fertilizer?

Fertilizer "is a substance that enriches soil so that plants will grow better." Fertilizers provide plant with the nutrients they need. Fertilizers can have and come from natural sources or synthetic chemicals.

Effect on Livestock

Although fertilizer is good for crops, it is not healthy for the local animals. Most marine wildlife are not highly sensitive to fertilizer that is given in the normal dosage used in the development of plant growth. Nitrate is commonly found in fertilizer, although nitrate itself isn't deadly for animals when consumed in high concentrations it can cause a disease called nitrate poisoning. Nitrate poisoning can cause seizures and convulsions, in can also cause infertility in cows. "Animals can die within a few hours of initial ingestion of a high nitrate feed. If cattle are fed once a day, maximum methemoglobin levels occur approximately eight hours after feeding."



Solution

We have come up with a plan to properly dispose of fertilizer, and prevent it from ruining nearby ecosystems. This plan that we have created could be installed into farms all around the world, and could possibly prevent pollution and more damaged ecosystems caused by agriculture and fertilizer.

Our Plan - Fertilizer Filtration

Once farmers have put fertilizer onto their crops and they have been watered, the water will then go into the soil and begin to fertilize it. The excess water will then go into pipes placed underneath the crop bed. These pipes will transport all of the excess fertilized water into a man-made pond, preventing the water from affecting nearby ecosystems and organisms. The lined pond will contain a filtration system filtering out the water, making it clean enough to enter other streams of water. These man-made ponds could then be connected to lakes and rivers, used at the farm for other reasons like a watering hole for the animals, or used to water crops again.