

Sustainable Agriculture

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What is Sustainable Agriculture?

Sustainable Agriculture is farming in sustainable ways meeting society's present food and textile needs, without compromising the ability for current or future generations to meet their needs.

The History of Agriculture:

Agriculture was invented around 7,000 to 10,000 years ago during the Neolithic era (New Stone Age). After some time, humans began to build tools and water systems that aided in better crop production, as well as began domesticating animals. Fast forward to today, we have far more technology readily available. Such as plows, and machines that harvest for us. Farmers have even begun to make hybrid seeds, so that crops grow faster. Farmers began bringing to light the issues of our farming practices in the 1950's, which then led to more vigorous laws that ensured farms in the United States followed EPA guidelines (Environmental Protection Agency) to ensure more sustainable practices.

5 Sustainable Agriculture Practices:

Permaculture: A food production system that mimics how produce and plants grow naturally in the environment. Permaculture uses natural principals that combine intention, smart farming, and design to reduce waste of our natural resources.

Aquaponics and Hydroponics: These are innovative farming techniques that do not require soil to grow plants and produce. The plants are fed by nutrients that are in the water system of aquaponics and hydroponics.

The use of Renewable Energy Resources: Sustainable farming includes the use of alternative energy such as wind power, hydropower, and solar power. This is not only great for the environment, but it is also cost effective for the farmers.

Crop Rotation: Crop rotation helps return nutrients to soil that had been used. This helps increase the health of soil, but it also keeps us from depleting the soil from its natural resources.

Trees to increase crops: This is called Agroforestry, it's a method that includes growing trees and shrubs with other plants and produce. Agroforestry guarantee sustainable practices because it is a very great way to use land. This method mimics a forest ecosystem, by allowing it to recycle nutrients naturally. This method also reduces the use of pesticides and herbicides.

Benefits of Sustainable Agriculture:

It contributes to Environmental Conservation: In order to care for the environment, we need to take important steps to ensure the future health of our ecosystems. Farmers that use Sustainable Agriculture reduce their dependency on nonrenewable energy such as fossil fuels, it will help them reduce the usage of chemicals, as well as conserve water. This sustainable practice will also reduce soil erosion, soil erosion is when topsoil is used up, and no longer available to grow crops as well as keep the environment healthy. It will also reduce runoff, which means less chemicals entering our freshwater systems. If all farmers including large scale- commercial farms adopted these sustainable practices, we could be looking towards a clean future for our planet.

It is economically beneficial: Sustainable Agriculture results in less cost that is involved in farming, if you think about how much is spent on land, seeds, water, machines, as well as employees it can be expensive. Moving towards reducing our use of lands will result in less cost for the farmers, as well as the economy.

Social Equality: Sustainable farm practices results in safer working environments because there is far less use of chemicals and heavy machinery. Sustainable Agriculture also produces more jobs and fair wages. This practice can also strengthen communities by bringing people together to learn and create a healthier environment as well as healthier food.

Sustainable Agriculture versus Industrial Agriculture:

Industrial Agriculture is one of the most widely used form of agriculture today, because it's led to be the most efficient way to produce food. But that is not the case. Industrial Agriculture causes a lot of problems when it comes to human health as well as the health of the environment. Industrial Agriculture has been known to dump, which means it forces impoverished (poor) countries to purchase cheap US grains for less than what it costs to produce it. Also, 1 in 6 United States citizens get very ill from food that is contaminated. Antibiotic fed livestock is also breeding antibiotic resistant bacteria, which can sling shot us towards a future of diseases that can no longer be cured by antibiotics. Industrial Agriculture also has negative affects on the environment, it causes deforestation, it ruins topsoil, as well as causes freshwater systems to become contaminated. But thankfully we are heading towards a brighter future with Sustainable Agriculture, which uses more natural forms of farming

practices as we've discussed. Sustainable Agriculture has various benefits not only for us humans, but also for our planet.

Resources:

<https://www.conserve-energy-future.com/methods-and-benefits-of-sustainable-agriculture.php> -Rinkesh

<https://www.hortidaily.com/article/9057986/top-5-sustainable-and-eco-friendly-farming-practices/> - Blog Pricewise, Publication date: Fri 4 Jan 2019

https://www.crestcapital.com/tax/history_of_agriculture#:~:text=Humans%20invented%20agriculture%20between%207%2C000,the%20development%20of%20metal%20tools- Michael Marcin, 2021

https://livinghistoryfarm.org/farminginthe50s/crops_19.html#:~:text=The%20Sustainable%20Agriculture%20Movement%20Begins%20during%20the%201950s%20and%2060s&text=At%20the%20same%20time%20that,beginning%20%E2%80%93%20the%20Sustainable%20Agriculture%20Movement- Bill Ganzel, 2007

<https://foodprint.org/issues/sustainable-agriculture-vs-industrial-agriculture/>