

Green Technology in Agriculture

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Introduction

What today's agriculture is doing to the environment? Though agriculture is a part environment; it is showing harmful impact on its own ecosystem. It's not by its own actions, but due to intensified human activities. Here we have a solution to curb these man activities. It's green technology. Before going to know anything about green technology, we have to understand what is technology? It is the application of scientific knowledge for practical purposes. Now, Green technology which is also called Environmental technology is utilization of technical knowledge and models to monitor and conserve natural resources and environment. It is also called clean technology and is an application of environmental science.

In agriculture, green technology means, sustainable utilization of resources for the production of crops without damaging environment. These technologies can be complex or as simple as, practices like ZERO TILLAGE or NO TILL-FARMING. The science behind this is, as there is no ploughing and usage of heavy machinery in the field, the soil is not disturbed, thereby releasing fewer green-house gases from the soil, and this technique also protects the soil from erosion.

Uses:

Some of the uses of green technology in agriculture is as follow:

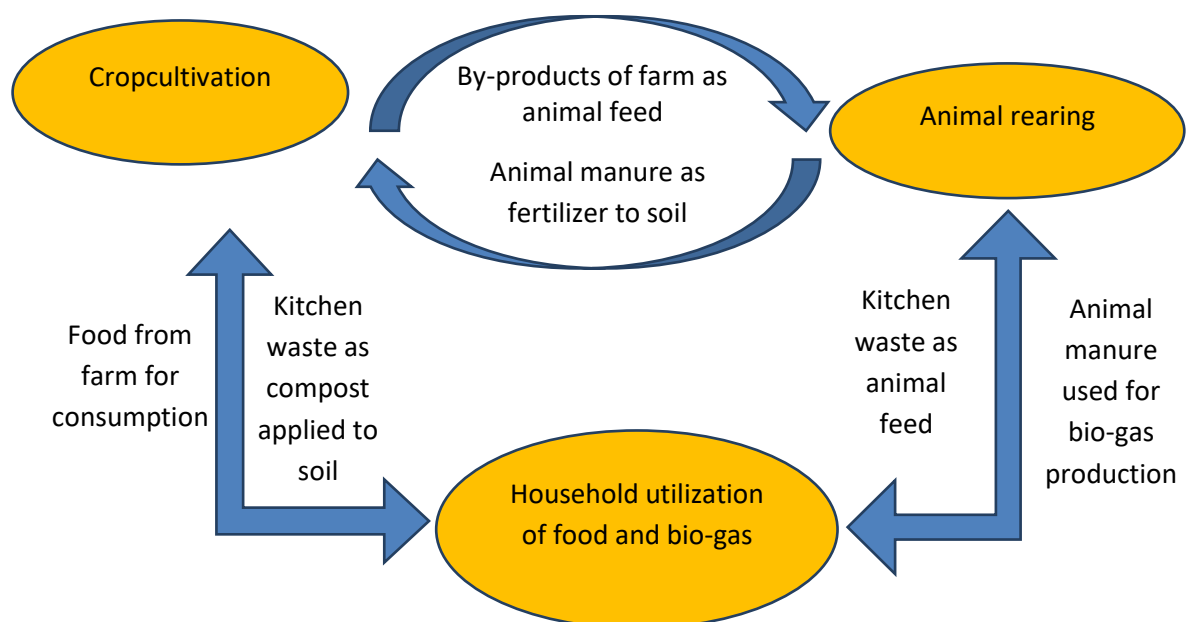
- ✚ It helps in protection of environment
- ✚ Efficient utilization of resources
- ✚ Utilization of by-products in the farm
- ✚ Reduction of energy wastage
- ✚ Helps in recycling and attaining self sufficiency
- ✚ Decreases the cost of production
- ✚ Its acts as an alternative to harmful practices in agriculture

Role of History in Green Technology in Agriculture:

Green technology is not a new concept to us. May be the term is new, but practices are not. Our forefathers in olden days used to follow certain practices like:

- ✚ Utilization of Beejamrutham for seed treatment
- ✚ Utilization of Jeevamrutham for improving soil quality there by plant growth
- ✚ Utilization of Panchagavya for increasing immunity in plants and also to increase flowering
- ✚ Following crop rotation and crop diversification to keep up soil health.
- ✚ Utilization of Neem based products like neem seed kernel extract (NSKE) for control of pests and diseases
- ✚ application of manures and compost of animals at the beginning of crop cultivation to replenish soil fertility. Infact this technique is the one which shows us the real meaning of agriculture, which is a balance between plant production and animal rearing.

All the above techniques are environment friendly and sustainable in nature, these are some of the practices that our ancestors used to follow, to give us pure and friendly environment and also given us a chance to pollute and damage it.



From the above example we can know, sustainability which is base of green technology in agriculture, is balance between plant and animal production, both of which, acts complimentary to each other.

Green Technology of Agriculture in Today's World:

In contrast to the above technologies, today's green technologies are highly mechanized to reduce the efforts by human beings. Some of them are:

- ✚ Vertical farming which can be called as sustainable urban method of farming.
- ✚ Irrigation methods and monitoring through wireless and remote monitoring system
- ✚ Integrated pest management with less utilization of synthetic chemicals
- ✚ Utilization of drones for spraying
- ✚ Utilization of GIS, GPS, Remote sensing for application of location specific practices
- ✚ Bio-fuel extraction from plants and its residues through transesterification as an alternative to fossil fuels.

There are many more of these technologies. Most of these are of high mechanization, so automatically they are more capital intensive. But most of the farmers in India are small and marginal, and they do not bear the expenses of the machinery and cost of cultivation. So most of these technologies go unfollowed by most of the people in our country. The only solution to this is community approach by the farmers, like, as everyone says unity is strength and government initiative and subsidies for implementation.

This is the critical time at which we have to apply these technologies to bring back healthy environment, because, we are at the brim and need to take action. The benefit and profit that we reap from these green technologies are also high. Let's now understand this by an example.

We all know that Delhi is considered as the most polluted capital city in the world for 4th year in row, and we also know that major cause for this is agriculture (stubble burning), contributing to nearly 50 % of the pollution. The paddy stubbles from kharif season are burnt in the field at the start of rabi season, to grow another crop, as it is the cheapest way to remove stubbles from previous season even though it is contributing to the environmental damage. Here comes many startups with green technology as a full stop solution to this. They are using these stubbles as a raw material for preparing tableware, eco-friendly plates,



biodegradable paper from its fibers and also used for manufacturing bio-fuels, there by adding additional income to farmers.

One acre of land producing 1.5 – 3 tonnes of stubble, the machinery from Delhi startup: ReneYou Genentech Pvt Ltd, which acts as cutter, raker and baler processes 20 – 30 tones of straw per day into bales, making the straw suitable for bio-fuel processing and generating a revenue of 25 lakhs per year. This income is shared between farmers and processors; Which is an added income to the farmers from by-products of farm.

There are some other green technologies associated with agriculture, in which land we use for cultivation, wood from trees, water harvesting systems that are previously used for agriculture are all inputs.

- ✚ Utilization of Sapwood for the purification of drinking water which is a simple technology.
- ✚ Using of wet lands for purification of waste water (recycling of water)
- ✚ Irrigation methods like DHEKLI and RAHAT systems which utilize animal power for drawing water from wells, thereby reducing the utilization of fossil fuels.

These green technologies also helps us to connect to the other sectors of the economy like educating people on these technologies and promoting Agri tourism and also helps in technological advancement in agriculture. As much as we diversify into other sectors, that much profit we earn through it. Finally anything which is in align with nature's principles are always profitable and sustainable and worth doing.