SUSTAINABLE AGRICULTURAL PRACTICES

In last week's article, we covered the role of EPA in the agricultural sector – to ensure that human health and that of the natural environment is not compromised. The end of October also signals the end of Agriculture Month in Guyana; this does not mean however that we must forget to employ good practices in our agricultural operations, whether we operate a simple kitchen garden, rice mills, or industrial fish farms. This week, we'll take a look at sustainable agricultural practices that you can and should adopt.

Our wellbeing is closely linked to the health of the environment where we live. Since sustainable farming methods affect the environment in a positive way, they also contribute to our quality of life. A sustainable food system is one that does not require chemicals, conserves energy and water, emphasizes local production, decreases inputs and utilizes resources more efficiently on site, values biodiversity and ecology, and works within our global natural resource limitations.

Firstly, and most importantly, sustainable agriculture produces safe food with high nutritional value. The quality of food is now more important than ever before. Numerous studies have shown that the nutritional content of grains, fruits and vegetables keep decreasing over the years. Scientists believe that popular high yielding varieties of crops often have poorer capacity of absorbing nutrients from the soil due to their weaker root systems, which is linked to lower nutritional content of the final produce.

Negative effects of increased pesticide levels in foods produced from intensively farmed lands are numerous, and impact both human health and the natural environment. Everyone can agree that less pesticides and other chemicals used to grow food is only better for us.

Food diversity is also much greater from sustainable farms, as they are not solely focused on producing major crops like corn or wheat. Instead, they often cultivate local varieties in highly diversified farming systems.

But that's not all. There are more advantages to sustainable farming in terms of providing economic opportunities to rural communities, such as giving jobs to young people and supporting socio-economic development of rural areas. At the same time, sustainable food production is more compatible in reducing the impacts of climate change and helps to strengthen ecosystem resilience.

Benefits of sustainable agriculture

Unlike intensive agriculture, sustainable farming has a great potential for benefiting the environment and preserving natural resources. It does so by following natural cycles, recycling nutrients and water, while omitting excessive use of agricultural chemicals.

Sustainable agriculture strives to help the environment by:

- Reducing agricultural runoff;
- Preventing pollution of lakes and rivers;
- Saving water;
- Naturally maintaining soil fertility by recycling nutrients on farm;
- Enhancing carbon sequestration by soils and perennial vegetation;
- Promoting energy efficiency of farming operations;
- Decreasing emissions of air pollutants and greenhouse gases;
- Creating habitats for pollinators and beneficial insects; and
- Ensuring welfare of farm animals but also providing space for the respectful coexistence with native wildlife.

Sustainable practices in agriculture

- **Hydroponics and aquaponics**

These innovative farming techniques involve the growing of plants without soil, nourishing the plants through specialized nutrients that are added to water.

In *hydroponic* systems, crops are grown with the roots directly in a mineral solution or with the roots in an inert medium like gravel or perlite. While aquaponics is the combination rearing aquatic animals and using that mineral solution to grow crops.

- **Agroforestry and food forests**

Agroforestry involves the growth of trees and shrubs amongst crops or grazing land. Agroforestry systems can combine both agriculture and forestry practices for long-lasting, productive, and diverse land use when approached sustainably.

In agroforestry systems, trees create a favorable microclimate that maintains favorable temperature and soil humidity, while protecting crops from wind or heavy rain. Trees have another important role. They stabilize soils, minimize nutrient runoff and improve soil structure. This is the reason why agroforestry has become one of the powerful tools of farmers in dry regions with soils susceptible to desertification.

Besides promoting healthy growth of food crops and maintaining soil fertility, trees in this farming system provide wood and fruits as an additional source of income for farmers. In these systems, possibilities for product diversification are many. Farmers can go even as far as growing a whole edible forest.

Patterned after natural forest ecosystems, ***food forests*** (also known as **"forest gardens**") are designed permaculture systems that consist of a multilayered edible "forest." Such a "forest" is composed almost entirely of perennial food plants, including a canopy of tall and dwarf fruit and nut trees, a fruit shrub layer, layers of perennial herbs, mushrooms and vegetables at the ground level, climbing plants, and root vegetables underground. Food forest systems are very productive due to both the diversity of plants that are growing there, and all of the plants within the system that are taking advantage of each existing niche within the system.

- **Natural Pest Management**

One of the main aims of sustainable agricultural practices is the prevention of the use of synthetic pesticides and other chemicals that should suppress pest infestations and pathogens. Applying increasing amounts of chemicals to grow food is not part of the long-term solution and doesn't help our health either. Greater diversity of crops, intercropping and crop rotations are among the pest management methods that have proven successful. The key to their success lies in dispersing preferred food sources of pests by blending in crops they do not favor. Additionally, diverse crops attract diverse insects and some of them are natural predators of pests, helping to keep their populations within limits, thus mimicking how the real ecosystem balances itself out.

- **Mulching, groundcovers, and manual weed control**

Farmers and other growers can dramatically reduce the growth of weeds and conserve soil moisture by covering the soil around their plants through the use of mulching and ground covers. By naturally suppressing weed growth, these practices greatly reduce, or in some cases even eliminate, the need to apply herbicides to kill weeds. Organic mulch material like, for example, wood chips, straw or grass clippings also improves nutrient retention in soils and encourages activity of soil microorganisms that help create healthy aerated soil structure. This reduces the need for tillage as soils are less compacted.

In addition to these practices, you can find guidelines for poultry and swine rearing on our website at www.epaguyana.org.

References

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https://greentumble.com/10-sustainable-farming-methods-and-practices/

You can share your ideas and questions by sending letters to: "Our Earth, Our Environment", C/O Communications Department, Environmental Protection Agency, Ganges Street, Sophia, GEORGETOWN, or email us at: eit.epaguyana@gmail.com, follow us on Facebook and Instagram, and subscribe to our YouTube channel.