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Perspective

Sustainable agro ecosystems and food security

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DESCRIPTION

One of the agricultural management technique that has a big impact on the environment, crop output, and agro ecosystems is tillage. By causing the decomposition of organic components and the release of Green House Gases (GHGs), which contribute to the greenhouse effect and global warming, Conventional Tillage (CT) techniques change the soil environment. Additional CT related characteristics that have a negative impact on food security and environmental sustainability include low organic matter, biological diversity, aggregate stability, high soil erosion and degradation, and sequestration strength. Long-term benefits of CT are equal to those of Zero Tillage (ZT), making ZT a potential candidate for sustainable agriculture. Reduces soil deterioration, erosion, tillage machinery impacts, and greenhouse gas emissions. Increases aggregate stability, biological variety, organic matter and nutrients, water, and water use efficiency. It promotes carbon sequestration, develops soil storage capacity, enables timely sowing and improved crop growth, increases yield and food security, and helps to lessen the negative effects of climate change on environmental resilience. Various potential direct and indirect advantages, the capacity to conserve resources, ZT is a useful and potentially effective strategy for agro ecosystem improvement, food security, and environmental resilience. Conventional agricultural management techniques, such as intense soil tilling, were desperately needed to justify the need for time to feed the growing population. These practices temporarily enhanced agriculture production but also drastically degraded natural resources. Various natural processes in agricultural environments are-

• A framework for managing agro-ecosystems that is network-focused and takes into account the various interactions between biodiversity and related ecosystem services

• Instructions for incorporating socio-economic factors into ecological networks

• The potential to scale up network methods to inform efforts to build resilience, including global food supply chains.

In order to achieve the sustainable development goals of food security, agriculture, resource conservation, and nutrition, soil salinization has grown into a significant global agricultural problem. The physico-chemical and biological features of soil as well as plant metabolism are negatively impacted by increasing salt levels. Salinity also has an adverse effect on the distribution and number of soil microorganisms and other species that live there. Food security is the world's most difficult problem due to the exponentially growing human population. A decrease in agricultural land is being caused by widespread urbanization. Pesticides have been widely utilized during the past few decades to improve the quality and productivity of agriculture and to keep up with the rising food demand. They have now established themselves as an essential component of the agricultural system.

The necessity of ensuring food security is becoming more and more necessary due to the expanding population and unpredictable effects of climate change. In light of the negative effects of the ongoing process of climate change on the means of food production, the concept of hunger explains the idea of food security. While accounting for the greenhouse gas emissions from agricultural output, attention is also given to the numerous adaptation strategies that might be used to mitigate the negative effects of climate change. Global food systems are becoming more and more at risk due to factors including climate change, resource depletion and contamination, rising population, rapid urbanization, and changing dietary habits. Agro ecology, or sustainable farming techniques has been hailed as one of the solutions to the problems that could help achieve the sustainable development goals of eradicating hunger and ensuring food and nutrition security.

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