



## Sustainable Plantations

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**This article is based on “How plantation sector can turn ‘near organic’” that appeared in The Hindu BusinessLine on 3 August 2019. It talks about the sustainability of Plantations.**

The plantation has an interface of agriculture and industry. It is a type of commercial farming where a single crop is grown on a large area. It was introduced by the Europeans in colonies situated in tropical countries.

In India, tea, coffee, rubber, sugarcane, banana, etc. are the important plantation crops. However environmental and man-made excesses of the input-intensive Green Revolution has made plantations unsustainable.

### Why the current model of Plantation is unsustainable?

Plantation agriculture is characterised by features like large estates or plantations, high capital investment, single crop specialisation, labour intensive etc., but it adversely affects the environment. For example:

- The biggest negative impact is due to the change in land use.
  - Over the 150-200 years, the forest was cleared to develop commercial crops, and that too dominated by mono-cropping.
  - This has led to the loss of productivity and biodiversity of the region.
  - Further, the plantations are converted into resorts, health cities or housing complexes.
- The plantation in India is motivated by the Green Revolution, which heavily relies on the use of inorganic fertilizers.
  - This leads to problems like deterioration of soil fertility, water pollution due to run-off etc.
- These negative effects further get aggravated due to heavy rains, floods and landslides- fallouts of climate change.

## How to make plantations sustainable?

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For environmentally sustainable agriculture in India, a new approach based on the prudent application of inputs and optimal use of **Nitrate Reductase** can be utilized.

### Nitrate Reductase' Principle

- Nitrate Reductase is an **enzyme** that is secreted in the **root zone** to denote that plant is ready to absorb the nutrients derived out of the nitrogenous format.
- It furthers absorption of zinc sulphate, boron, magnesium sulphate and manganese, which are essential micronutrients to ward off infections such as blister blight and tea mosquito attack.
- This enzyme is synchronised with the **sunshine hours**. It is supposed to remain active for **two hours** a day.
- **By synchronising the use of nitrogenous fertiliser with the secretion of the enzyme, the use of fertilizers can be minimised and a near-organic form of cultivation can be achieved.**
- Thereby the abuse of nitrogenous fertilisers can be contained.
- Rather than planting community selling land to real estate developers, the plantation sector can take up pisciculture.
  - For Pisciculture, mini earthen dams can be created. These earthen dams can be a source of additional income to the planters.
  - Since the regions in India dominated by plantations are located in the seismologically disturbed area.
  - So for the construction of permission from the India Meteorological Department (IMD) has to be taken.
- Precision Farming techniques like drip irrigation and fertigation, along with the use of technologies like artificial intelligence should be used in plantation.

### Way Forward

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- The plantation sector in India suffers from lack of long-term policies or distorted policies since Independence, climate change, increasing labour and input costs, the need to improve yield, the necessity of growers to focus on value addition and unavailability of both skilled & unskilled labour.
- Comprehensive and integrated government policy is needed that focuses on value-addition of existing crops, inter-cropping of high-value crops, the introduction of the concept of integrated farming and ecotourism in plantations.

- The policy should also encourage increase in the revenue and employment opportunities from unit area of plantation through different ecologically sustainable vocations and other activities like inter-cropping, integrated farming activities, harnessing of non-renewable energy sources, fruit processing etc.

Plantation agriculture is very important for an agrarian country like India, but unsustainable plantations will lead to an environmental disaster. Hence, the government should address the ills of the plantations and while promoting sustainable practices in plantations keeping in mind the menace of global warming.

### ***Drishti input***

Plantation agriculture is very important for an agrarian country like India, but unsustainable plantations will lead to an environmental disaster. Comment.