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CONNECTION BETWEEN ORGANIC AGRICULTURE AND SOIL SUSTAINABILITY

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Introduction:

Environmental damage is being brought on by rising demand and a more opulent lifestyle among humans as a result of technological improvement. The use of herbicides, insecticides, fungicides, and fertilisers in modern agriculture has significantly decreased output while also harming the environment. Biodiversity and the quality of natural resources have benefited from organic farming. India ranked eighth globally and first in terms of the overall number of producers in organic agriculture (India year book 2020). The total area certified as organic as of March 31, 2021, according to the National Program for Organic Production, was 4333184.93 ha. Sikkim was the first organic state in India, although Lakshadweep recently earned the title of organic state when discussing Union territories. Madhya Pradesh has the largest area of organic farming out of all the states, followed by Rajasthan and Maharashtra. The total amount of organic product exported in 2020–21 will be 88819.69 MT, or approximately INR 707849.52 lakh.

Organic Agriculture: Principles:

Organic farming is a method of crop cultivation that relies as much as possible on crop rotation, FYM, a biological system of nutrient mobilisation, and protection of crop plants while largely excluding the use of synthetic inputs like fertiliser, pesticides, insecticides, and other similar chemicals. Four main crop production principles are generally followed in organic agriculture.

- Principle of health
- Principle of care
- Principle of ecology
- Principle of fairness

Simply put, sustainable agriculture aims to feed the current generation's requirements without jeopardising the supply of resources for future generations. High variety and the utilisation of renewable inputs create a stable environment in sustainable agriculture. In agriculture that is sustainable, the rate of resource extraction does not outpace the rate of regeneration.

Components of Organic Farming:

Crop rotation, green manure and

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compost, vermicompost, biological pest control, the use of biofertilizers, animal husbandry products as biopesticides, crop waste management, etc. are key elements of organic farming. These substances boost the soil's nutritional level, which has a direct impact on the biota (soil living population).

Crop rotation:

It protects the soil from the excessive removal of a particular elements and maintain balance of the nutrient cycle. Crop rotation becomes important in long term soil and farm management system.

Biofertilizer:

It is a culture of living microorganism which when applied to plant, soil or seed promotes growth and increases availability of nutrients. Biofertilizers are ecofriendly and help in building nutrient cycle and organic content of the soil.

Vermicomposting:

Vermicompost is a type of composting in which certain species of earthworm and some mesophilic micro-organism convert organic waste product into a better end product. Earthworm feed on the waste material and the waste material passes through the digestive system of the worm giving out a granular form called vermicast. The casting is rich in micro & macroorganism and benefits the environment by reducing the use of synthetic fertilizers. The most commonly used

earthworm species in vermicomposting is *Eisenia foetida*.

Crop residue management:

It is extensive term which include all type of residue and tillage management system. Residue management help in moisture conservation, reduce wind erosion, maintain soil condition and increases soil microbial population.

Biopesticides:

Biopesticides are the pesticides which are derived from the natural material such as plants, animals and micro-organism. For an example Pyrethrin is a chemical which is naturally found in chrysanthemum flower and used to control insects such as flies, moth, mosquito etc. Till now in India more than 900 biopesticides have been registered by the Central Insecticide Board and Registration Committee.

Organic manure:

They have no detrimental effects on the health of the soil. Increases in porosity, water holding capacity, cation exchange capacity, texture, and soil structure are just a few examples of how organic manure benefits the physical and chemical characteristics of the soil. Organic manure, which is bulky by nature and can be used to replace artificial fertiliser and preserve the condition of the soil, includes FYM, compost, biogas slurry, green manure crops etc.

Government Programs A variety of participation guarantee programmes have been introduced by the federal government and state governments in an effort to advance the idea of organic farming and achieve sustainability in the agricultural sector. The government is offering subsidies and financial aid to entice an increasing number of farmers. We give our future generations a healthy and sustainable ecosystem by maintaining this goal in the agricultural sector. The following major programmes provide a better foundation for organic farming in India:

- Paramparagat Krishi Vikas Yojna
- Mission Organic Chain Development for North Eastern Region
- National Mission for Sustainable Development • Soil Health Card
- Mridaparikshak

Conclusion:

Biodiversity is increased via organic farming, which also preserves the soil's ecology and ecosystem. It controls a variety of manmade contaminants that harm the environment. Because organic farming acts as a binding agent in the soil, finer aggregates are formed and the soil has a higher permeability, which helps to avoid soil erosion. Products that are organic are nutritiously high-quality and free of dangerous synthetic substances like pesticides and insecticides. Only organic

farming can supply the quality goods that will be in demand in the future. Organic farming improves both the production quality and financial well-being of farmers.

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