Bacterial mixture for Plant Growth

Why in News?

In a recent study published in the journal Environmental Technology and Innovation, researchers have used the power of specific bacterial species to remove organic pollutants from soil.

- **Bacterial mixture** – Species from the ***genera Pseudomonas and Acinetobacter***, were good at *breaking down aromatic compounds* in contaminated soil and thereby improving soil and plant health.
- **Need** – Soil contaminants are toxic, can inhibit seed germination, reduce plant growth, yield and also accumulate in seeds and plant biomass.
- **Working** - They break down pollutants into simpler, harmless, non-toxic compounds.
- **Recover soil health** – They fertilise the soil and improve soil health.
- **Inhibit fungi** – They produce substances like *lytic enzymes and HCN (hydrogen cyanide)* that can kill or inhibit the growth of plant pathogenic fungi.
- These bacteria are eco-friendly and target only the harmful fungi

*Despite the use of fungicides & disease-resistant cultivars, fungal infections still cause **global crop losses of 10–23% annually**, with key calorie crops in India, like rice and wheat, particularly affected.*

- **Make nutrients accessible to plants** – They convert insoluble form of essential nutrients like *phosphorus and potassium, into soluble forms* and make them readily available to the plants.
- They produce *siderophores*, which help plants absorb iron in nutrient-limited environments.
- **Improves plant growth & health** – They produce high amount of *growth hormone called indoleacetic acid* (IAA).
- **Boosts yield** - They significantly boost the growth and yield of crops (wheat, mung bean, spinach, fenugreek, etc.) *up to 45-50%.*

Reference

[The Hindu| Bacterial Mixture for Plant Growth in Contaminated Soil.]