

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 <u>lytic enzymes and HCN (hydrogen cyanide)</u> 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.

