Moringa oleifera, Mitigator for Harmful Algal Blooms (HABs)

Why in News?

A research team at Clarkson University recently published a study about a plant-based alternative to traditional chemical methods of combating Harmful Algal Blooms (HABs).

- The team's research focuses on using ***Moringa oleifera*** to combat the cyanobacterium that causes HAB known as ***Microcystis aeruginosa.***
- The team comparing it to the traditional chemical method of using aluminum salts.
- **Microcystis aeruginosa -** Microcystis aeruginosa cells, the cyanobacterium that causes HABs contain a family of potent toxins known as microcystins.
- It can cause negative health effects in humans, from mild skin rashes to serious illnesses.
- They can also cause severe liver damage and even death in dogs and livestock.
- Any method used to treat harmful algal blooms must ensure that the cells remain intact to prevent the release of these toxins into the aquatic environment.
- **Moringa oleifera** - It is a ***Plant-based alternative*** for harmful algal bloom mitigation.
- The seeds of Moringa oleifera contain proteins that act as natural flocculants.

  Flocculant is the substance that causes particles in liquid to clump together, and the clumped particles are called flocs.

- Aluminum salts, such as alum (potassium aluminum sulfate) and polyaluminum chloride, are commonly used as flocculants in water treatment processes.
- They effectively aggregate particles, facilitating their removal from water.
- However, their use raises environmental concerns, particularly regarding the formation of toxic sludge.
- This sludge can contain soluble aluminum compounds, which may leach into water bodies, posing risks to aquatic life and potentially entering the food chain.
- **Advantages -** Moringa oleifera offers a biodegradable, plant-based alternative that is less polluting.
- Its use as a flocculant reduces the risk of toxic sludge formation and minimizes environmental impact.

Reference

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