# 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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