Threats of Plasticulture

Why in news?

The agriculture food system is increasingly becoming dependent on plastics resulting in more plastic pollution.

What is plasticulture?

- Plasticulture is a term used to represent the application of plastics in the agricultural sector.
- The proliferation of plasticulture endangers soil, biodiversity and human health.
- In the **farming sector**, plastics are used to pack seeds and fertilisers in single-use plastic sachets, sacks and plastic containers.
- **Other plastic products** used in agriculture are - seedling trays, mulching film, greenhouse film, protective nets, drip irrigation tapes and irrigation pipes.
- Polyethylene, polypropylene, expanded polystyrene, polyvinyl chloride (PVC) and polyethylene terephthalate are few main polymers found in them.

Agricultural value chains used 12.5 million tonnes of plastic products globally in 2019, reported the Food and Agricultural Organization (FAO).

What are the threats posed by plasticulture?

- The application of plastics in the agriculture sector is hailed to contribute towards the *'Second Green Revolution'* in the country.
- Soil is becoming poisoned due to the application of chemicals and plastics which eventually threatens the whole ecosystem.

Just 1 kg of thin mulching sheets is enough to cover and contaminate as much as 700 square feet of agricultural land.

- **Microplastics -** The plasticulture has led to microplastics entering every living organism on the planet.
- According to the FAO report, soils are known to contain larger quantities of microplastics than oceans.
- **Soil porosity -** With time the additives and chemicals embedded in mulch films can gradually diminish soil porosity and hinder air circulation.
- **Microbial activity -** It also has the capacity to alter microbial communities, thereby reducing farmland fertility.
- **Poison plastic -** PVC releases toxic chlorine-based chemicals and is a known

carcinogen.
- PVCs or low-density polyethylene are primarily used in the plastic mulch films and also in irrigation pipes and drip tapes.
- **Leaching -** Carcinogenic chemicals, specifically phthalate acid esters, from plastic films have high potential of leaching into farm soil.

What are the challenges in reducing plasticulture?

- **Plastics industry -** Constantly promotes its own studies on how plastics boost yields, save water, reduce fertilisers, and cut labour.
- The industry maintains a deafening silence on its negative impacts on soil and environment.
- Furthermore, it has a strong lobby to influence the government.
- **Rules -** The Centre banned single-use carry bags with less than 120 microns, but it provided a 50% subsidy for using single-use mulching sheets as thin as 15 microns.
- **Government initiatives -** Plastics are being promoted by the industries through several government bodies like
    1. In 2001, to promote the use of plastics, Ministry of Agriculture constituted National Committee on Plasticulture Applications in Horticulture (NCPAH).
    2. This was renamed as National Committee on Precision Agriculture & Horticulture.
    3. Currently, 22 Precision Farming Development Centres have been established to promote the use of plastics in horticulture.

Around 99% of plastic is produced from fossil fuels by refining oil, natural gas, or coal.

- **Petrochemical industry -** Growth in the petrochemical industry will also boost plasticulture practices in the country.
- The demand for chemicals and petrochemicals in India is expected to reach US$ 1 trillion by 2040.
- **Plastic Waste Management -** Management of agricultural plastic waste is close to non-existent and have become immortal and omnipresent.
- Most ‘agro plastics’ have a limited lifetime (less than a year) hence, farmers manage their agroplastics in two ways: Burning or burying.
- When plastics are ***burned***, they emit hazardous substances such as dioxins and furans, which cause cancer.
- ***Burying*** of plastics releases microplastics which impact human health when agricultural produce is consumed.

About 67% of the people in villages preferred to burn household plastic waste, according to the findings of a survey released in 2022.

What is the way forward?

- An outright ban on non-essential agri plastics.
- Countries like India have pioneered sustainable agricultural practices using locally available and eco-friendly materials, we should make use of it.
- A new '*Extended Legislature Responsibility*' clause could be invoked.
- In this the people who have been given the mandate by the citizens take concrete measures to safeguard the planet from the hazards of plastic in agriculture.

References

1. DTE - Why agri plastics are bigger threats than they appear to be?