Agricultural Plastic Pollution

Posted at: 19/08/2025

Agricultural Plastic Pollution : A Silent Crisis in Farming

Context

There has been a **significant rise in plastic sediments in agricultural soil across Asia** in recent years. This has raised concerns over **soil health, crop productivity, food safety, and long-term sustainability** of agriculture.

Introduction

Agricultural plastic pollution refers to the **accumulation of plastic residues in farming systems due to agricultural practices**. With the expansion of modern commercial farming, plastics have become central to productivity, but their **mismanagement and persistence in soil** have created widespread environmental challenges.

Agricultural Plastic Pollution

- Definition – The accumulation of plastic in the environment due to farming practices.
- Sources – Mulch films, irrigation pipes, pond liners, seedling trays, packaging, and storage.
- Asia – According to **FAO**, Asia accounts for **nearly half of global agricultural plastic usage**, making it the largest consumer.

Use of Plastics in Agriculture

- Modern applications – Plastics are used in mulching, polyhouses, micro-irrigation, and food storage.
- Benefits – Polyethylene film moderates soil temperature, prevents moisture loss, and suppresses weeds.

- Yield improvement – Crops like cotton, maize, and wheat have shown a **30% yield increase** with mulching at a low cost.
- Negative impact – Residues of up to **300 kg per hectare** found in soils. Just **1 kg of thin mulching sheets can contaminate 700 sq. ft. of farmland**.
- FAO report 2021 – Agriculture used **12 MT of plastic products** in production and **37.3 MT in food packaging** in 2019.

Impacts of Agricultural Plastic Pollution

- Soil health – Reduced fertility due to accumulation of residues.
- Disrupted ecosystems – Hampers sustainable farming practices.
- Microplastic contamination – Study in Maharashtra recorded **87.57 pieces per kg of soil** at a dumpsite.
- Plant growth – Adverse effects on root biomass and soil organisms like earthworms.
- Food chain risk – Microplastics absorbed by plants enter **human and animal bodies**.

Challenges in Addressing the Issue

- Lack of policy focus – Agri-plastics receive less attention compared to urban waste and water pollution.
- Short-term priorities – Farming decisions focus on seasonal yield, ignoring long-term impacts.
- Farmer unawareness – Communities remain uninformed about environmental damage.
- Weak waste management – **90% of Indian villages lack systems**; **67% of households burn plastics**.
- Recycling crisis – Only **9% of plastics produced worldwide** are recycled.

- Insufficient inclusion – Initiatives like Maharashtra Plastic Action Roadmap overlook agricultural plastics.

Measures to Tackle Agricultural Plastic Pollution

- Awareness – Educating farmers about long-term risks.
- Research – Development of **bio-plastics** and eco-friendly alternatives by ICAR and research bodies.
- Ban on single-use plastics – Strict enforcement at the farm level.
- Circular approach – Emphasis on **reduce, reuse, recycle**.
- Policy framework – Legally binding strategies with accountability for producers.
- Village action plans – Integration of agri-plastic management with **climate action strategies**.
- Monitoring – Penalties for burning, burying, and open dumping of plastics.
- Sustainable farming – Promotion of **vermicomposting, bio-mulching, bio-fertilisers, cover cropping, and conservation agriculture**.
- FAO guidelines – **Voluntary Code of Conduct (2024)** for sustainable use of plastics in agriculture.

Quick Facts

- First synthetic plastic – Produced in 1907.
- Global production – From **2 MT in 1950** to **450 MT annually today**.
- Environmental leakage – **19–23 MT** enter aquatic systems yearly; **13 MT accumulate in soil**.

- Human exposure – Microplastics found in food, water, and even human bodies. A litre of bottled water may contain **240,000 particles**.

Conclusion

Agricultural plastic pollution is a **silent but growing environmental challenge**. It threatens **soil fertility, biodiversity, food security, and human health**. Addressing it requires a **multi-pronged strategy of awareness, innovation, regulation, and sustainable farming practices**. Urgent steps to reduce dependence on plastics and promote eco-friendly alternatives are essential to secure the **future of agriculture and the environment**.