

World Environment Day Special

Watershed Organisation Trust (WOTR) warns government about rising use of plastics in agriculture

- Use of plastics in agriculture is rising with application in pond liners, green houses, micro-irrigation and plastic mulching
- Raises concerns about application in mulching as it could damage soil quality, alter microbial communities and potentially introduce carcinogenics into food chain
- Also warns that crops like cotton grown in plastic contaminated soils could lose commercial value due to lint contamination
- Alternatives exist and so government needs to go beyond just ban on single use plastic bags and bottles

Pune, June 5, 2018

On World Environment Day, Pune based NGO, Watershed Organisation Trust (WOTR), has called for state and union governments to go beyond ban on single use plastic bags and bottles and look at its growing use in agriculture and food production.

Plasticulture, or the use of plastics in agriculture, is extensively used in lining of farm ponds, greenhouse cultivation of crops, micro-irrigation (drips and sprinklers) and plastic mulching. Plastic mulch in particular has been where there is a rapidly increasing demand and should be of concern to us as it is a potential source of entry into our food system.

Why are farmers turning to plasticulture

The **Ministry of Agriculture**, Government of India believes that its optimal application is a step in the right direction to achieve the overall vision to double farm income by 2022.

The key benefits of Plasticulture include:

- increase in crop yields (in excess of 20%, water saving (~30-40%) and
- saving in other agri inputs viz. agro chemicals & fertilisers. Plasticulture can well be imbibed as the mainframe system within the ambit of sustainable agriculture practices domestically.
- Its effective implementation is likely to result in robust food grain production and consequent rise in agriculture GDP in excess of 4%.

What are the problems with plasticulture

As with the concerns with plastics in other sector, there are issues with their application in agriculture also. The plastic film residue can:

- **decrease soil porosity** and air circulation,
- change **microbial communities**, and

- potentially **lower farmland fertility**.
- Entry into the food chain

“Fragments of plastic film have been shown to release **potentially carcinogenic** phthalate acid esters into the soil, where they can be taken up in vegetables and pose a human health risk when the food is consumed”, says Arjuna Srinidhi, Senior Researcher and Policy Analyst at WOTR.

“Film fragments left in fields can also **accumulate pesticides and other toxins** applied to crops. This is a special risk for sheep, goats and other livestock grazing on crop stalks because of their potential to ingest plastic material or the chemicals that leach from it”, says Srinidhi.

WOTR also warns that when cotton crops are grown in plastic-contaminated soil, the **lint risk being contaminated**. If that were to happen, the quality of the output is downgraded because traces of plastic can interfere with the coloring process. This could decrease the commercial value of the crops, increase consumer anxiety and cause huge losses in traditional cotton growing areas.

“Another issue with regard to the plastic mulch (films) is that it is not easy to **recover and reuse them**. Although films in US, Europe and even India are thicker than 15-20 microns, Chinese films are less than half the thickness of those films and go down to about 8 microns. That thinness makes the material less robust and more difficult to recover after use”, says Srinidhi.

What are our alternatives?

Managing Trustee of WOTR, Crispino Lobo, highlights alternatives to address this growing concern of plastics in agriculture. “There are **alternative natural materials** obtained from plants and animals, and newer generation **bio-polymers** which are plastics made from biomass sources”, says Mr. Lobo. He also highlights a recent UN report which talks about conventional alternatives to plastics – such as paper, cotton, and wood – as well as less obvious solutions including algae, fungi, and pineapple leaves – among others.

Crispino Lobo also says that, “with regard to agriculture in particular, some of the solutions might come with a little more physical effort – like using organic mulch – or others that come at slightly higher cost – like biodegradable materials. Therefore, state and national policies have to come to the rescue to incentivize good and responsible behavior”.

While lauding the governments efforts in steps taken to ban single use plastics and enforcing penalties for non-compliance, WOTR urges action that goes beyond such bans and address its use across all sectors so that we may make a difference to contamination of our soil, water, food and air. “And while research and development helps develop more alternatives as commercial options, the traditional resource management principles of **reuse, reduce, recycle** will continue to hold true”, concludes Mr Lobo.

#####THE END#####