

Joint Press Release

Plastics in soil threaten agricultural sustainability, health and environment

Siem Reap Phnom Penh, 16 February 2023- For many years, plastics have unlocked significant benefits for farmers. From mulching and drip irrigation to greenhouse films, plastics have helped millions of farmers globally to enhance production, reduce crop losses and conserve water, increase incomes, and improve livelihoods.

Resilience Development Initiative (RDI) - in partnership with iDE Cambodia and resourced by the Cambodia Agribusiness Development Facility program (CADF), which is funded by the New Zealand Ministry of Foreign Affairs and Trade (MFAT) - has researched plastic used in the agriculture sector in Cambodia and found that Cambodian farmers in horticulture generate an estimated 390-625 kilograms of plastic per hectare per year (kg/ha/hr). The study also showed that despite their many benefits, agricultural plastics are creating challenges for human and environmental health.

Since waste collection services in Cambodia are still limited, especially in rural areas, farmers often choose from three methods of plastic disposal: on-site burial, on-site burning, and illegal dumping. Burning plastic can release carcinogenic substances and other toxic particles into the air, affecting farming families and livestock. A significant part of the plastic waste, especially the mulching film, stays in the field, generating macro-plastics and micro-plastics that end up in soil, rivers, and underground water which can inhibit plant growth and may enter the food chain, creating threats to agricultural sustainability and food safety.

The study found that the biggest contributor to plastic usage in agriculture is plastic mulching, followed by drip lines and plastic nets. Plastic mulch is estimated to produce an average of 235 kg/ha/year of plastic waste and drip lines an average of 228 kg/ha/year.

RDI and iDE Cambodia have collaborated on two, interrelated studies: an Environmental Pollution Caused by Plastics used in the Agricultural Sector and a Market Study on Compostable Mulching Film and Plastic Bags. These studies cover Cambodian horticulture farmers in five provinces, namely Battambang, Banteay Meanchey, Oddar Meanchey, Siem Reap, and Kandal.

Mr. Matthew Allen - New Zealand's First Secretary (Development) for Cambodia, Lao PDR, and Thailand - highlighted that, *"New Zealand is proud to be a longstanding supporter of the sustainable and climate-smart development of Cambodia's agricultural sector. We are pleased to partner with iDE to support initiatives in the sector that help farmers achieve a better livelihood while also safeguarding the environment. We supported this study about agricultural plastics*

waste in Cambodia because we want to contribute to a new and important discussion about sustainable solutions for plastic farm waste.”

“Plastic pollution is a serious problem and a global concern. We’ve been active in the agriculture sector in Cambodia since 1994 and saw in recent years the increased use of plastic products by smallholders. We knew that it was important to better understand the impact of this on the health of farming families and the environment. We deeply appreciate MFAT’s support for this study and RDI’s interest in the research,” explained Mr. Kevin Robbins, Country Director of iDE Cambodia.

Mr. Robbins added, “In addition to the environmental study, we wanted to understand farmers’ perceptions and motivations, their current practices, and their willingness to pay for alternatives. We also believed that the biodegradable solutions market study was important so that we could better engage the private sector around business opportunities that help address this challenge.”

Cambodian farmers frequently use plastic mulch and the survey showed that this use has enabled farmers to increase their farming income. 67% of surveyed farmers use plastic mulch, have a positive perception about its utility, and plan to continue using it. 98% of surveyed farmers were aware of plastic mulch and its benefits such as increases in crop yields and quality and weed reduction. 80% of surveyed farmers also expressed interest to change their current waste management practices and said they would prefer communal waste collection services.

During the research, sector experts commented on the rapid increase in urban consumption of fruit and vegetables in Cambodia, noting that this trend will likely require Cambodian farmers to increase production in order to meet local demand. Experts raised concerns that without new practices or technologies, farmers in Cambodia may continue to scale up their use of plastics, making it even more important for the sector to find better waste management solutions.

One potential solution is biodegradable plastic mulch. Although this technology is used by farmers in other countries (e.g., US, European countries, and China), it does not yet exist in the Cambodian market. Some biodegradable and compostable bags already exist in Cambodia, yet the study found that these bags do not decompose quickly enough for agricultural purposes. Biodegradable bags will degrade within 5 years, whereas compostable bags can decompose fully in less than 2 years. There are some products that can fully decompose in less than 4 months after burying them in the soil but these products need to be imported and are currently too expensive for widespread adoption within the agricultural sector of Cambodia.

The study found that surveyed farmers are impressed by the economic benefits of using plastic mulch and would hesitate to switch to a biodegradable plastic mulch if it hurt their profits. However, farmers who generated larger profits were more open to switching. The research showed that 30% of farmers who make roughly USD 2,000 per year or more in profits were willing to pay a higher price for biodegradable mulch.

Reflecting on the results of the research, Dr. Elisabeth Rainawati, RDI’s Team Leader for the environmental pollution study, said, *“This scenario suggests a critical concern and the urgent*

need for agriculture plastics solutions.” She further explained four recommendations that have come out of this study: (1) the use of more durable plastic products to reduce overall waste, (2) the use of plastic products that are easier to recycle, (3) investment in waste management services in rural areas, and (4) investment in plastic recycling and upcycling industries. She added that the Cambodian market needs new, affordable biodegradable plastic products, perhaps locally produced to support the local economy and reduce import expenses.

A combination of short- and long-term interventions are needed, and this research is a first step to better understand the nature of the problem and contribute to a wider discussion around possible solutions.

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