

Micro plastics assessment in Cyprus Agriculture Environment

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Abstract

The impacts arising from Microplastic Pollution (MPs) on human health, the environment, economy, and society have been studied previously, but there remains a lack of comprehensive understanding about crucial areas requiring action to combat marine pollution (Chatziparaskeva et al., 2022). One such critical region is the Mediterranean coastline, which is of particular concern due to the accumulation of MPs. In the Mediterranean basin, approximately 480 million individuals reside in the coastal area, contributing to some of the highest per capita solid urban waste generation rates, ranging from 208 to 760 kg per year (European Environment Agency (EEA), 2015). Demographic projections suggest a notable surge in the population, expected to reach around 572 million inhabitants by 2030. This growth is accompanied by two prominent trends: 'coastalization' and 'urbanization', both of which contribute to amplified waste generation and increased human activity along the coastal zones (Setiti et al., 2021). Unfortunately, the existing waste management infrastructure in these areas often falls short of meeting the escalating demands (Setiti et al., 2021; Zorpas et al., 2015). This accumulation poses significant threats, particularly considering the region's heavy reliance on tourism and the decline of popular tourist destinations due to coastal and marine waste.

The repercussions of MPs extend beyond coastal regions, impacting agricultural environments as well. In the context of the Mediterranean, Cyprus serves as a notable example, facing challenges related to MPs in both its coastal areas and agricultural landscapes (Koul et al., 2022). The country's reliance on agriculture, coupled with its thriving tourism industry, creates a complex dynamic where MPs pose a threat to both sectors. As MPs accumulate in coastal zones, they not only affect marine ecosystems but also contaminate agricultural lands through various pathways, potentially jeopardizing food security and the pristine appeal of tourist destinations (Huang et al., 2023). This intertwining of issues emphasizes the urgency of addressing MPs pollution comprehensively across various environments to safeguard both the economy and the environment (Eisfeld-Pierantonio et al., 2022).

The aim of this research was the strategic analysis and mapping of MPs from soil samples taken from agricultural areas of Cyprus. The research indicated the presence of MPs in more than 70% of crops while the collection of the soil samples was carried out from topsoil horizon due to their greater influence by MPs. Figure 1 presents the sampling and study area for which the

research was carried out. Main conclusions included the necessity of using plastics and proper management to mitigate pollution. The rational separation of materials to be recycled, the reuse of materials, processing, and the increase of recycling bins in public areas are considered imperative. The cooperation between the state, organizations, and industries should be based on the protection of people and the environment.

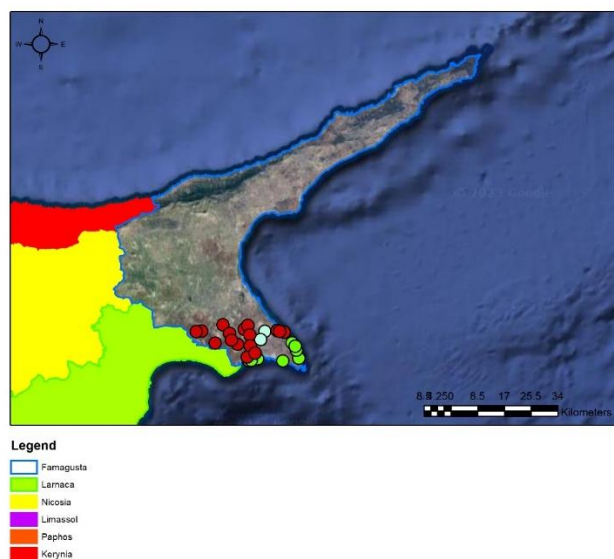


Figure 1. Sampling sites from Famagusta District

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