

Practice Abstract n°3: Using digital tools for the sustainable management of agricultural plastic waste : insights from the PAPILLONS ATLAS



The pollution of agricultural soils by Micro and Nano plastics is a major concern. PAPILLONS proposes a digital ATLAS to map the distribution and assess the impact of plastic waste, generated by agricultural applications, to makes it possible to quantify and locate this waste so that it can be managed effectively. This paves the way for more sustainable use of agricultural plastics limiting potential negative impacts of plastic wastes.

1. Objective of the ATLAS

The main objective of the ATLAS of APW is to estimate the quantities of APW due to diverse agricultural applications (such as greenhouse covering films, mulching films, low tunnels films, nets, irrigation pipes, agrochemical containers, bags for fertilizers, and support equipment for vineyards) and to map their geographical distribution in several European countries. By providing quantitative and spatial data, the ATLAS aims to inform policy makers, waste managers and farmers for informed decision making and targeted interventions.

2. ATLAS methodology

The ATLAS methodology is based on the collection of data concerning the main crops that utilize plastics from the national agricultural censuses and to farmers. All information is reported for each country at regional level. These data are then integrated into a digital development process,

through a geographic information system (GIS), using geographic mapping and modelling techniques to provide an estimate of the APW distribution across territories. Emphasis is placed on integrating different agricultural applications and waste types, ensuring a comprehensive representation of this environmental challenge.

3. Impacts and applications of ATLAS

ATLAS provides stakeholders with the ability to locate sources of APW and quantify its extent, facilitating a thorough understanding of the problems and the implementation of targeted mitigation measures. Intervention strategies can easily be planned, such as the development of waste management infrastructure adapted to local needs. In addition, ATLAS facilitates the promotion of sustainable rural development scenarios by targeting key areas for reducing APW and implementing environmentally friendly practices.

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<https://www.papillons-h2020.eu>



papillons@farm-europe.eu



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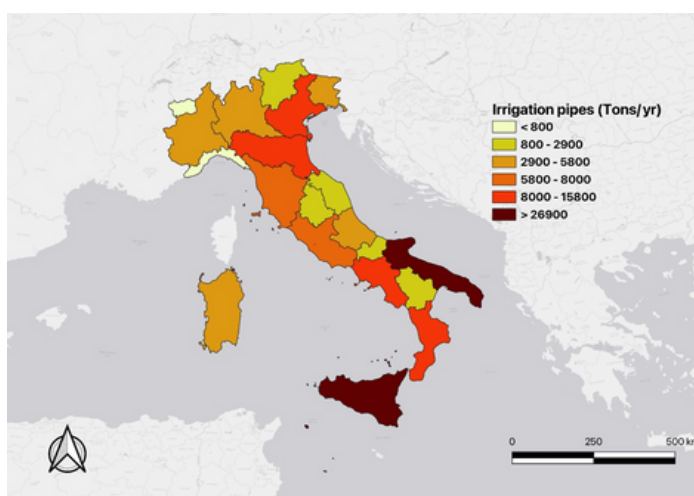
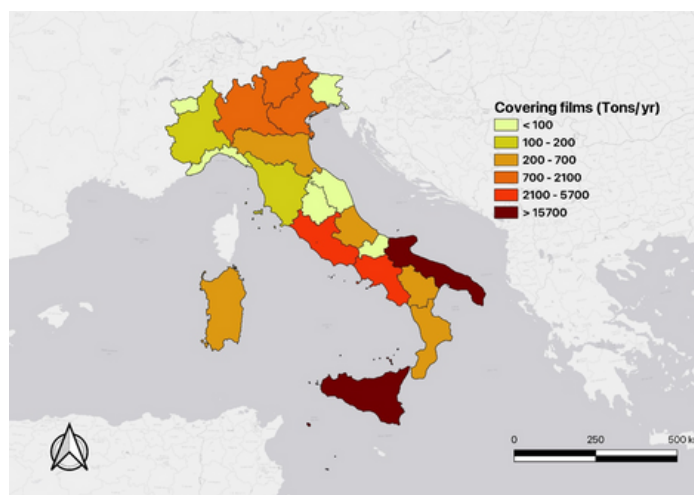


4. ATLAS results :

ATLAS first results show the estimates and the spatial distribution of APW in southern European countries (Italy, Spain, Greece, and Portugal), highlighting regions with intensive agricultural activities. The maps geographically represent APW distribution at the NUTS 2 regional level.

5. A case study about the estimation of agricultural plastic waste in Italy :

The figures on the right show the estimates of APW for two different practices in Italy. The first concerns covering films for greenhouses, orchards and vineyards, while the second concerns irrigation pipes for various crops. These maps provide an overview of the geographical distribution of APW in Italy, highlighting the regions with the highest levels of APW and the main applications contributing to it. This visualization allows policy makers, waste managers and farmers to identify areas where priority waste management interventions are needed.



6. Conclusion

Digital inventories such as the PAPILLONS ATLAS are essential tools for the sustainable management of APW. The PAPILLONS ATLAS makes it possible to quantify and locate this waste so that it can be managed effectively. The ATLAS makes a significant contribution to promoting more sustainable agriculture and cleaner territories by enabling informed decision-making and the implementation of targeted strategies to manage and reduce APW.



The ATLAS is developed by the University of Bari, by Evelia Schettini, Ali Hachem, Fabiana Convertino and Giuliano Vox.



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