Dealing with plastic waste from agriculture activity

The increased agricultural production and food quality has forced the growing use of plastics in various activities. The plastic wastes are partially recycled in or outside Portugal, nevertheless, the contaminated are sent to landfill. It is crucial to consider new models for their valorization at a regional level and from a circular economy perspective. In the scope of the Placarvões project, a study was elaborated, which included the types and quantities of plastics used in the irrigation area of the Alqueva Dam, in southern Portugal. The crops that use most plastic are intensive olive groves, almonds and table grapes, which represent more than 91% of total plastic waste. The production of activated carbons (ACs) is a solution to avoid plastics landfill. ACs were produced from plastic used on food packaging (PB-Samples) and sheeting film (PS-Samples) by activation with K_2CO_3. ACs presented well-developed textural properties (PB-K_2CO_3-1:1-700 and PS-K_2CO_3-1:1-700 exhibited a volume of 0.32 and 0.25 $cm^3\ g^{-1}$ and an apparent surface area of 723 and 623 $m^2\ g^1$, respectively). Both ACs performed very well concerning four pesticide removals from the liquid phase. This solution is very promising, such these ACs could be applied in effluent treatments, on a large scale.