

ABSTRACT

The environmental crisis and food availability in urban areas have become increasingly pressing issues, especially with population growth and waste pollution. This study aims to develop activated carbon from waste tires (EcoTire Carbon) as a water filtration solution for urban farming systems. The method used includes carbonization in low-oxygen conditions and chemical activation using NaOH with concentration variations of 0.1 M, 0.5 M, and 1.0 M. Characterization of the activated carbon was conducted through adsorption tests on methylene blue using a UV-VIS spectrophotometer. The results show that activated carbon from waste tires has a high adsorption capacity for methylene blue, with effectiveness increasing in line with the NaOH concentration used during activation. Additionally, an urban farming prototype was developed by integrating a mechanical filtration system with hydroponics. This innovation is expected to reduce environmental pollution, improve clean water availability, and create business opportunities for urban communities, particularly those living along polluted riverbanks.

Keywords: activated carbon, waste tires, water filtration, urban farming, methylene blue.