

Response surface optimization of potassium extraction from waste banana pseudo stem

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A simple, efficient, and abundantly available agricultural waste material, banana pseudo-stem (BPS) was examined as raw material for the extraction of potassium. The effects of various process parameters such as temperature, initial pH, contact time, banana pseudo-stem dosage and size of banana pseudo-stem particles on potassium extraction efficiency were studied by running batch experiments in Erlenmeyer flasks. Response Surface Methodology (RSM) was used to design the experimental runs. Modelling and optimization of process variables to obtain maximum extraction of potassium from raw material were done using RSM. The maximum extraction efficiency of potassium was found to be 83.96% at a temperature of 40°C, pH of 1, contact time of 30 min, BPS weight of 26.076 g and initial BPS size of 300. The results revealed that banana pseudo-stem can be used as good source for potassium extraction.

Key Words: Potassium extraction; Banana pseudo-stem; Response Surface Methodology; Optimization; CCD

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