

The Production of Biofertilizer from Naturally Occurring Microorganisms by Using Nuclear Technologies

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Abstract : Context: The production of biofertilizers from naturally occurring microorganisms is an area of research that aims to enhance agricultural practices by utilizing local resources. This research project focuses on isolating and screening indigenous microorganisms with PK-fixing and phosphate solubilizing characteristics from local sources. Research Aim: The aim of this project is to develop a biofertilizer product using indigenous microorganisms and composted agro waste as a carrier. The objective is to enhance crop productivity and soil fertility through the application of biofertilizers. Methodology: The research methodology includes several key steps. Firstly, indigenous microorganisms will be isolated from local resources using the ten-fold serial dilutions technique. Screening assays will be conducted to identify microorganisms with phosphate solubilizing and PK-fixing activities. Agro-waste materials will be collected from local agricultural sources, and composting experiments will be conducted to convert them into organic matter-rich compost. Physicochemical analysis will be performed to assess the composition of the composted agro-waste. Gamma and X-ray irradiation will be used to sterilize the carrier material. The sterilized carrier will be tested for sterility using the ten-fold serial dilutions technique. Finally, selected indigenous microorganisms will be developed into biofertilizer products. Findings: The research aims to find suitable indigenous microorganisms with phosphate solubilizing and PK-fixing characteristics for biofertilizer production. Additionally, the research aims to assess the suitability of composted agro waste as a carrier for biofertilizers. The impact of gamma irradiation sterilization on pathogen elimination will also be investigated. Theoretical Importance: This research contributes to the understanding of utilizing indigenous microorganisms and composted agro waste for biofertilizer production. It expands knowledge on the potential benefits of biofertilizers in enhancing crop productivity and soil fertility. Data Collection and Analysis Procedures: The data collection process involves isolating indigenous microorganisms, conducting screening assays, collecting and composting agro waste, analyzing the physicochemical composition of composted agro waste, and testing carrier sterilization. The analysis procedures include assessing the abilities of indigenous microorganisms, evaluating the composition of composted agro waste, and determining the sterility of the carrier material. Conclusion: The research project aims to develop biofertilizer products using indigenous microorganisms and composted agro waste as a carrier. Through the isolation and screening of indigenous microorganisms, the project aims to enhance crop productivity and soil fertility by utilizing local resources. The research findings will contribute to the understanding of the suitability of composted agro waste as a carrier and the efficacy of gamma irradiation sterilization. The research outcomes will have theoretical importance in the field of biofertilizer production and agricultural practices.

Keywords : biofertilizer, microorganisms, agro waste, nuclear technologies

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