

## Enhancement of Rice Straw Composting Using UV Induced Mutants of Penicillium Strain

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**Abstract :** Fungal mutant strains have produced cellulase and xylanase enzymes, and have induced high hydrolysis with enhanced of rice straw. The mutants were obtained by exposing Penicillium strain to UV-light treatments. Screening and selection after treatment with UV-light were carried out using cellulolytic and xylanolytic clear zones method to select the hypercellulolytic and hyperxylanolytic mutants. These mutants were evaluated for their cellulase and xylanase enzyme production as well as their abilities for biodegradation of rice straw. The mutant 12 UV/1 produced 306.21% and 209.91% cellulase and xylanase, respectively, as compared with the original wild type strain. This mutant showed high capacity of rice straw degradation. The effectiveness of tested mutant strain and that of wild strain was compared in relation to enhancing the composting process of rice straw and animal manures mixture. The results obtained showed that the compost product of inoculated mixture with mutant strain (12 UV/1) was the best compared to the wild strain and un-inoculated mixture. Analysis of the composted materials showed that the characteristics of the produced compost were close to those of the high quality standard compost. The results obtained in the present work suggest that the combination between rice straw and animal manure could be used for enhancing the composting process of rice straw and particularly when applied with fungal decomposer accelerating the composting process.

**Keywords :** rice straw, composting, UV mutants, Penicillium

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