World Bioenergy Congress and Expo

June 13-14, 2016 Rome, Italy

Valorization of pineapple leaf waste through integrated production of bioethanol and biomanure

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Indiscriminate disposal of the solid waste generated from various agricultural practices and agro based industries causes detrimental effects in the environment. Utilisation of the waste biomass for the production of value added products through biotechnological intervention not only helps to combat environmental pollution but also adds to the economy. Hence, the present work focuses on integrated production of bioethanol and biomanure from pineapple leaf waste for its complete utilisation leading to zero waste generation. Bioethanol production from pineapple leaf waste was carried out through simultaneous saccharification and fermentation (SSF) by employing cellulolytic enzyme from *Trichoderma reesei* Rut-C30 and *Saccharomyces cerevisiae*. The SSF of pineapple leaf waste resulted in bioethanol production of 7.01% (v/v). The residue obtained after bioethanol production was inoculated with five different strains of blue-green algae and their concoction for nitrogen (N), phosphorous (P) and potassium (K) enrichment. Among them, *Fischerella muscicola* was found to enrich N, P and K content of the residue by nearly 6.84, 8.78 and 14.17 fold than that of the initial content, ultimately leading to improved NPK ratio of approximately 3.5:1:2. The efficient conversion of pineapple leaf waste to bioethanol and enrichment of residue obtained after SSF for its application as biomanure envisages environmental sustainability.

Biography

Anjani Devi Chintagunta is pursuing her PhD under the guidance of Prof. Rintu Banerjee from Indian Institute of Technology, Kharagpur. She completed her Master's from JNTU, Kakinada. She has published 2 papers in peer reviewed national/international journals, 2 patents (filed) and attended 2 International conferences. She has achieved best paper presentation award in National symposium on Innovative and Modern Technologies for Agricultural Productivity, Food Security and Environmental Management held at Mangalore, Karnataka in 2011.

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