

# Microbial Degradation of Plant Waste Materials using Actinomycetes isolated from Egerton University Soils in Kenya

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Every harvest season, receives a lot of plant waste material that have a negative effect on the environment. The rate at which bacteria and fungi in the environment decompose these wastes is low. This study aimed to isolate actinomycetes from soils obtained from Egerton University and test the actinomycetes for the ability to decompose plant wastes materials. Soil samples were collected from field 7 in Egerton University, Kenya. Actinomycetes were isolated using starch casein agar medium and coded EU followed by a number. Maize stalk and *Grevillea* sp. leaves were collected from field 3 in Egerton University. One hundred grams of the plant materials were mixed with starch casein broth inoculated with the isolated actinomycetes in conical flasks and incubated in an orbital shaker at 28°C for 1 month. The materials were washed using 70% ethanol prior to drying in a hot air oven and weights determined. The isolate EU 10 presented grey aerial mycelia, EU 13 (Green), EU 15 (Grey) and EU 19 (White). The isolates presented varying morphological, physiological and biochemical characteristics. There was no significant difference in plant wastes degradation between isolates EU 10, EU 13, EU 15 and EU 19 ( $F=11.49$ ,  $p=0.07$ ). Actinomycetes from Egerton University had the potential of degrading maize stalk and *Grevillea* sp. leaves. There is need for massive isolation and screening of actinomycetes for production of metabolites that are capable of degrading plant waste materials.

**Keywords:** Actinomycetes, degradation, isolation, microbes, plant wastes.