Title:

STARCH DEGRADING BACTERIA SPECIES IN EMBU COUNTY, KENYA. A CASE OF MICROHABITATS IN UNIVERSITY OF EMBU FARM.

Student Name and Admission Number: JAMES KIMANI NJOROGE, B132/11143/2014

Supervisor:

Dr. Josephine Ngunjiri

Abstract

Starch is the most abundant storage polysaccharide of plants and the chief source of carbohydrates for humans and is therefore of considerable economic importance. The polysaccharide is deposited plants in the form of small insoluble particles called starch granules. They consist of chains of glucose molecules which are linked together by alpha-1, 4- and alpha-1, 6- glycosidic bonds giving rise to amylose and amylopectin respectively when hydrolyzed. Amylases are starch degrading enzymes obtained from several sources such as plants animals and microorganisms that have great significance in present day biotechnology. These enzymes have wide area of potential application including food processing, animal nutrition, beverage production, pharmaceutical, textile, detergent, paper and pulp, biofuel industries. Their applicability has been expanding due to the increasing interest in using agro industrial residues as substrates associated with the development of solid state fermentation technology. Starch is a very abundant and renewable feedstock and the need for minimizing the extent of environmental pollution. Availability of starch degrading microorganisms particularly bacteria serve as a resourceful alternative in the production of biofuel. Ability to degrade starch is used as a criterion for the determination of amylase production by a microorganism. The project involved carrying out various tests to determine morphological and biochemical characteristics, process optimization for amylase production that is, the carbon source, organic and inorganic nitrogen sources, pH and temperature. From the study six bacterial isolates were obtained namely J1, J2, J3, J4, J5 and J6. They belong to *Bacillus* genus based on the gram staining and appearance.