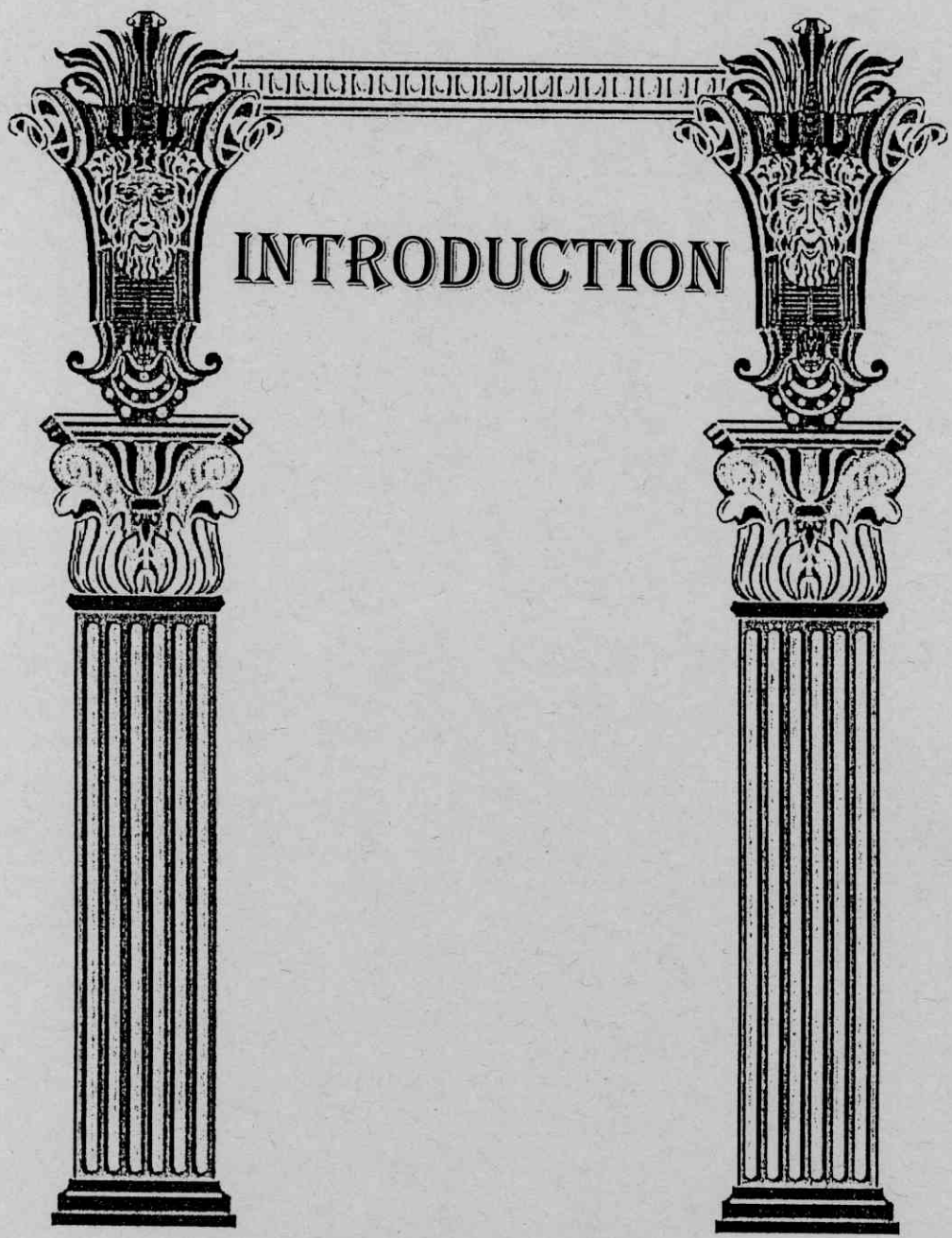

INTRODUCTION

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The amount of crop wastes seems to be high and could be used to obtain some important products. It has been observed that over 70% of agriculture and forest has become non-productive materials and has been wasted in processing. Actually, those lignocellulosic waste material are abundant and ready available in every corner of the world, particularly in the tropical and subtropical countries.

In Egypt, yield of sugarcane was 119231 Kg/HA and the total cultured area was 130000 HA which produce 15500000 ton/year, increased steadily from 1990 to 2000 with high production of unusable bagasse **(FAO 2000)**.

The annual consumption of sucrose in Egypt reached to about 1.59 million tons **(Ministry of Agriculture 1994)** and the major part of this sugar is imported. To cover this shortage of sucrose in the local market, some valuable products e.g. glucose and xylose produced from renewable lignocellulosic materials.

Bioconversion of cellulosic materials to sugars which could be used as a source of food, fuel and chemicals is of potential importance in view of the increasing pressure on the existing food and energy sources, **Ryu and Mandels (1980).**

Cellulose and hemicellulose are the predominant waste materials in agriculture residues (sugarcane bagasse). These materials are abundant and consist mainly of cellulose (40-60%), with lesser, but significant amounts of hemicellulose (20-30%)

and lignin (15-30%). These renewable resources on earth since both cellulose and hemicellulose fraction of biomass can be converted to simple sugars that can subsequently be fermented, **(Huitron and Kirchner 1996)**.

These lignocellulosic can be hydrolyzed to soluble products by enzymes. Enzymes are being used increasingly as catalysts for chemical conversion, but they are expensive and have limited stability.

The aim of this work is to study the feasibility of sugarcane bagasse as the substrate for the enzymatic hydrolysis to soluble reducing sugars (glucose and xylose). The important attempts for the production of cellulase and hemicellulase enzymes were achieved by using *Aspergillus niger* and *Trichoderma harzianum*. Also, the optimal conditions and kinetics behavior of prepared enzymes were examined. Also, the saccharification processes were thoroughly studied to obtain the most suitable condition for glucose and xylose syrups production from sugarcane bagasse under this investigation.