BEAN SPROUT PRODUCTION

Project Report is presented in partial of fulfillment for the award of the

Bachelor of Electrical Engineering (Hons.)

UNIVERSITI TEKNOLOGI MARA

MALAYSIA

NURHAYATIE BINTI MOHD ZIN
Faculty of Electrical Engineering
Universiti Teknologi MARA
40450 Shah Alam, Selangor
MAY 2007

ACKNOWLEDGEMENT

Foremost, all praise to Allah S.W.T, the most gracious and merciful who gives me the healthy, strength and patient to complete this project. This project would not have been possible without the help and encouragement of countless number of people who gave a lot of their time and energy selflessly. Throughout finishing this project, I have gained a lot of experience and skill which I believe it is important for me to enhance my knowledge to the future.

Here, I would like to take this opportunity to express my sincere gratitude to my project supervisor, Assoc. Prof. Mahmud bin Ibrahim for his superior guidance, support, valuable consultation and supervision through this study. His precious suggestion, ideas, beneficial criticism and encouragement throughout the whole duration of implementation this project are very much appreciated.

Last but not least, I am grateful to my family, especially my parents for their advice, support, belief and prayer that has enable me to succeed. Also to my colleagues that help me either directly or indirectly toward completion of this final year project.

Thank You.

ABSTRACT

This project presents the development of monitoring and controlling the of Bean Sprouts Production (BSP) system using PIC microcontroller. The system automatically regulates the required watering of bean sprout seedling for the production of short stemmed bean-sprout which is normally used in 'pecal'. The excess water used in the system is collected, filtered and reused. This study is focused on the water system and recycle process but does not concentrate on the environment such as air quality and temperature even though this may affect comfort. In designed this project, system description consists of hardware and software. The hardware includes design and implementation of switches, valves, pumps and water sensor circuit. For the software, assembly language is written in MPLAB software for the functionality of the microcontroller.

KEYWORDS

Bean Sprouts Production System, Water Recycle Process.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The demand for fresh bean sprouts has increased dramatically in the last ten years. There are many methods used to produce the bean sprouts. For example, the traditional method involves sprouting green or black mung beans in buckets in which a large stone was placed on top. The sprouts were manually watered at regular interval until the grower sprouts are ready for the market. The manual growing technique is labour intensive and proved prohibitive when large volume is needed. Workers need to oversee the growing process 24 hours a day, watering the sprouts at fixed regular interval.

However, due to its labour intensive nature of growing process, the producers are small in number. Traditionally bean sprout are grown indoor. The beans are placed in a porous contained. Regular watering of the beans for several days is necessary for successful production. For short stemmed bean sprouts, a two minutes shower in the 90 minutes interval for two days is sufficient. Mechanization helps increase the production but cost mostly prohibitive. Controlling the process using PIC is a cheaper alternative.