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# شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

# جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

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COMPARATIVE STUDY  
ON THE USAGE OF DIFFERENT METHODS OF  
FARMYARD MANURE SPREADING UNDER  
EGYPTIAN CONDITIONS

BY

**EHAB ABD EL-AZIZ EL-SAIDY**

B.sc. in Agric, Mech. Faculty of Agriculture,

Menoufia University, 1988

A Thesis submitted to the graduate division in partial  
fulfillment of the requirement for the degree

of

**MASTER OF SCIENCE**

Major subject

*Agricultural Engineering*

*Agricultural Eng. Dept. Faculty of Agricultural*

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Supervised by

Prof. Kalim Farah Hanna *K.F.Hanna*

Prof. Dr. El-Sayed Youssef Ghoniem *El Sayed Ghoniem*

Dr. Mohamed Abd El-fattah . Abd El-Maksoud

( Committee in Charge )

Deposited in the Faculty Library

Date / / 1995 (Library)

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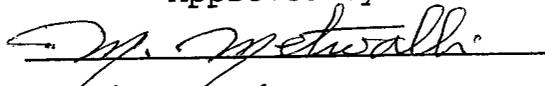
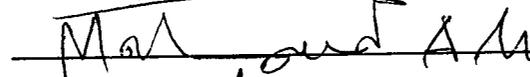
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## **1- INTRODUCTION**

## 1- INTRODUCTION

Agriculture sector plays a vital role in the economy of Egypt because of it's effect in the income of the country.

The government does its effort to increase the Agricultural production by the mean of the vertical and the horizontal increase.

Fertilization is one of the most important Agricultural processes which has a direct effect in increasing the vertical process because it is affect on the physical, chemical and biological properties of the soil and plant.

Organic manure has multi benefits, so it supplies the plant with the nitrogen, increases the moisture content of soil, increases the organic matter and improves the soil drainage, Cook (1982).

Beside the recent increases in price of commercial fertilizer, made the world to have an interest in using organic manure for fertilizing, Specially when the means of transporting and distributing became so easy to use. It will help actually in saving the environment from pollution and protecting the human health.

One of the important factors to renew the use of manure is the farm machinery which supply the farmers with the equipment for transporting and spreading the manure. In Egypt as in the other countries, researchers in the Agricultural Engineering field do their effort to improve the equipment in use to be suitable for the Agricultural conditions and invent modern methods for manure spreading. This study aimed to make a comparison between the different methods which are used in Egypt for manure spreading and also to achieve a new method by using a modified rotary tiller with changed angles for it's blades.

The farmers were and still using the traditional methods for transporting and spreading manure in their fields, the donkey is one of these methods and the wooden card is another one, which is better than donkey. Both these methods costs a lot of money, time and efforts.

The manure spreader is one of the mechanical methods which

were used in this study. An American manure spreader (Dual) of 150 cm width with 3 levels of forward speed and 3 rotating speeds have been used in this study for transporting and spreading the manure.

The ordinary rotary tiller with modified blades, with 7 different angles of action from  $0^{\circ}$  to  $90^{\circ}$  every  $15^{\circ}$  was the other mechanical method for spreading the manure at both 3 levels of rotating and forward speeds. It was an additional benefit of the tiller which was used only in tilling.

The following criteria have been taken into consideration to evaluate the performance of both the manure spreader and the modified rotary tiller as a mechanical methods used in farmyard manure distribution :

operating width; manure height distributed on soil; manure distribution uniformity; performance rate. In addition to, the area of spreaded pile and the continuity of manure distribution along the direction of travel were studied in case of using the modified rotary tiller as a manure distributor. Also a comparative evaluation of the manure distribution operation cost of various methods used in the investigation has been carried out to get the best method of manure spreading that suits, particularly, the small average size of land holdings and the farmer's income.