

1- INTRODUCTION

Although harvesting is one of the most labor consuming agricultural operations, yet harvesting machines are still not widely used in Egypt. This routine remains as primitive as ever with the sickle as the traditional harvesting tool. Also, the cutting of cotton stalks is commonly done using a hoe; a laborious and expensive task. In most cases, labor is not sufficient at the proper time so the operation goes very slowly resulting in high losses from birds, mice, and grain shattering.

The poor economic conditions of the Egyptian farmer, the high cost of combines, the small average size of land holdings, and the limited irrigation systems which now exist are great hinderances to mechanical harvesting .

The tractor has been used in Egypt in some limited agricultural operations (seedbed preparation, threshing and transportation) and that has in some cases rather increased the cost of these operations, therefore increasing the use of tractors to include harvesting would decrease the overall cost of these agricultural operations.

Using mowers to harvest crops from small farms, even as an intermediate technology for some crops, would be a vital contribution in increasing the use and decreasing harvesting time for the crops. This would enable farmers to sow the next crop without delay and make them independent of the laborers.

2. REVIEW OF LITERATURE

2. 1. Types of mowers, their adjustments and maintenance.

2. 1.a. Types of mechanical mowers.

Culpin (1976) and Shippen et al., (1980); showed that many mowers used on farms are of the cutter -bar type and they may be either mounted directly on to the tractor or partially carried by caster wheels at the rear. they pointed to the following types:

a) Finger-bar mowers:

The knife driven by a pitman or connecting rod, lies through the fingers, which are bolted to the cutter -bar back. The knife section slides over the flat faces of the fingers, which are known as ledger plates, from the centre of one finger to the centre of the next one. The length of travel being mostly 7.62 cm (3 inch).

b) Fingerless (double-knife) mowers :

These types consist of two similar knives located one above the other by spring-loaded oscillating pivot arms. Both the pivot arms and the knife connections operate through sealed ball joints. Individual knife sections move over each other exactly like a pair of scissors. There