

## **DEDICATION**

I wish to dedicate this research to my father's soul, great mother, my dear wife and lovely sons the source of my happiness for unlimited support and encouragement through my live.

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## **ABSTRACT**

The implement was designed and developed in the workshop of Agricultural Engineering Department, College of Agricultural Studies, Sudan University of Science and Technology.

The implement was constructed from series of disc blades mounted on a frame. The two discs arranged together with specific space and angles to adapt with cotton stalks pulling operation. The equipment mounted on the Tractor by three hitches linkage.

After construction of the implement the field performance test was done in Gezira Scheme by measuring the tilt and rake angles parameter .The experimental design was

split plot in a complete randomized block adopted with three replication.

The results revealed that the best performance (94%) of the implement was found at the tilt angle of 30 degree, and rake angle of 20 degree . The implement with this specification and parameters can be manufacture in both industrial and semi-industrial factories and even small workshops because the design was simple. And the manufacture cost of the implement is 3000 SDG and it will work for several years .

## ملخص الدراسة

تم تصميم وتصنيع الآلة بورشة قسم الهندسة الزراعية بكلية الدراسات الزراعية جامعة السودان للعلوم والتكنولوجيا . وهى تتكون من سلسلة أقراص قطع مثبتة على قصة رئيسية وتم تثبيت الأقراص بحيث تتقابل كل اثنين مع بعضيهما بزوايا ميل وتلامس مع الأرض محددة لإيجاد أفضل وضع ممكن . وتحمل الآلة على الجرار بواسطة الشبك الثلاثي .

بعد اكتمال عملية التصنيع فقد تم قياس أداء الآلة بمزرعة اللقطن بمشروع الجزيرة وذلك بقياس زاويتي الميل والتلامس مع الأرض وقد أجريت التجربة باستخدام تصميم القطاعات كاملة العشوائية. بثلاثة مكررات وقد أظهرت النتائج أن الآلة حققت الأهداف بكفاءة مرضية وبعد ضبط زاوية الميل على 30 درجة وزاوية التلامس مع الأرض على 20 درجة أعطت كفاءة في القلع بلغت 94% .ويمكن تصنيع الآلة تجاريا في المصانع أو حتى في الورش وذلك لسهولة التصميم وقد بلغت التكلفة 3000 جنيه وتعمل لعدة سنوات .