

## DEDICATION

I dedicate this research to my Family and Those who  
gave me a piece of advice.

## **ACKNOWLEDGEMENT**

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## **ABSTRAC**

This research intends to measure the technical efficiency and total productivity index of Sesame and Sorghum crops for Gedaref and south Kordofan mechanized rain fed schemes, for ten years. In this study the nature of efficiency and productivity change is investigated through using data envelopment analysis (DEA) technique .The Malmquist productivity index has the components which are used in performance measurement; such as changes in technical efficiency, change in technological change as well as change in Total factor productivity TFP. The study identifies efficiency, inefficiency sources and benchmark for these schemes. In general the study tries to identify the efficient and inefficient agricultural schemes that had highest outputs levels from the least inputs? Also the study wants to recognize the reference set for inefficient agricultural schemes so as to improve their efficiency levels?

In terms of Sesame and Sorghum products the results indicate that South Kordofan schemes show progress in (total factor productivity (TFP), similarly their frontier shift were also positive, this means that there is positive change in managerial efficiency during the period of the study for South Kordofan Mechanized rain fed schemes. Whereas Gedaref mechanized rain-fed farms were weak in term of (total factor productivity (TFP) for the two crops .This weakness was mainly contributed from frontier shift, which is also so weak during the period (2001-2010). The results of the study also indicate that South Kordofan farms were at top ranking in term of TFP growth due to high performance in using local agricultural inputs, which include labor, finance and machines. These schemes can serve as the reference set to improve the efficiency of Gedaref agricultural schemes.

**Key words:**Data Envelopment Analysis(DEA),mechanized rain-fed Schemes.Agricultural inputs and outputs

#### مستخلص الدراسة :

(TPF) يهدف البحث الى دراسة الكفاءة التقنية ومؤشر عامل الانتاجية الكلية لمحصولي السمسم والذرة في مشاريع الزراعة المطرية والآلية بولايتي جنوب كردفان والقضارف ، لتحديد عوامل الكفاءة في مشاريع الزراعة الآلية والمطرية

التي تستخدم اقل المدخلات الانتاجية لانتاج المحاصيل الزراعية.تم فحص ودراسة مؤشر الانتاجية الكلية ونوع الكفاءة باستخدام اسلوب التطويق الخارجي للبيانات وتشتمل مؤشر الكفاءة الانتاجية على الكفاءة التقنية ، والتغير في ( DEA ) التكنولوجيا . تم تحديد عوامل الكفاءة وعدم الكفاءة والمشروعات التي تمثل المجموعة المرجعية التي تساعد المشروعات الاخرى لتحسين الكفاءة.بصفة عامةتحاول الدراسة الاجابة التعرف على مشاريع الزراعة المطرية والآلية الاكثر كفاءة في منطقة الدراسة ، وايضا مشاريع الزراعة المطرية والآلية الاقل كفاءة في منطقة الدراسة وتحديد المشاريع التي يمكن ان تخدم كمرجعية لتحسين كفاءة المشاريع الاقل كفاءة بمنطقة الدراسة .

تشير نتائج الدراسة الى ان مشاريع الزراعة الآلية والمطرية في ولاية جنوب كردفان قد سجلت قيم موجبة لكل من عوامل الانتاجية الكلية وحدود الكفاءة مما يعني الكفاءة ونجاح الادارة في استخدام مدخلات الانتاج خلال فترة الدراسة ،والتي تشتمل على الالات الزراعية ،والعمالة والتمويل الزراعي ، من ناحية اخرى نجد ان مشاريع الزراعة الآلية والمطرية في ولاية القضارف تعاني من ضعف الكفاءة الانتاجية لهذين المحصولين ، ويعزي ذلك لضعف كفاءة ومهارة العاملين ، الماكينات الزراعية ونقص التمويل الزراعي .

من حيث ترتيب المشروعات في مجال الكفاءة ،نجد ان مشاريع الزراعة المطرية والآلية في ولاية جنوب كردفان تأتي في المرتبة الاولى ، تستخدم كمجموعة مرجعية لتحسين كفاءة انتاج مشاريع الزراعة المطرية والآلية في ولاية القضارف .

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