

Sudan University of Science and Technology

College of Graduate studies

**Effect of Mechanized Rain fed Farming
On Vegetation Cover and Effect of Shelter
Belts on Environment At Ghadambaliya Area
Gedaref State (SUDAN)**

اثر الزراعة الآليه في الغطاء النباتي واثر الاحزومه الشجرية في البيئه
بمنطقة القدمبليه ولاية القصارف (السودان)

**Thesis Submitted For Fulfillment of The Requirements
of M.Sc. Degree in Forest Sciences**

By

Ahmed El Lazim Ahmed Idreas

Supervisor

Prof. Dr. Mohamed Abdo Desougi

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Dedication

This work is dedicated to my parents who's encouraged me to continue my education during their life, and to my family.

Acknowledgment

First thanks , to Allah the Greatest.

I would like to thank my supervisor Prof . Dr. Mohamed Abdo Desougi for his continued attention, encouragement and advice throughout my work.

I would also like to thank my colleagues and friends , in research unit, (El Gedaref - El Khartoum). Library , forestry administration for their help and cooperation.

Abstract

This study was conducted at the Gedaref state. It was the first part of the Sudan in which mechanized rain fed farming was introduced .Mechanization first started in Ghadambaliya area north of the Gedaref state .The objective of this work is to know the effects of mechanized rain fed farming on vegetation cover and the effect of shelter belts on environment Ghadambaliya area Gedaref State (SUDAN) . It's clear that most of vegetation cover was removed except a few natural reserved forests. Also it's important to know the negative reflection of the deterioration on environmental factors and human life at the area. Vegetation cover and forests are cleared for growing of crops, because it is characterized by its fertility and suitability for growing crops. The expansion of mechanized rain fed schemes, tradition rain fed agriculture, illicit cutting for charcoal and fire wood and cover grazing created environmental problems, that effect ecological equilibrium and biodiversity. The study explained the fluctuation in climatic factors and change in biotic factors, degradation in soil resources, reduction in grains production and shortage in forest products. The problem increased and the people lost the multipurpose of the species .farmers believed that, they could participate in protection and rehabilitation of the area when ever those concerned provide the seeds and tree seedling.Reseach mothed of stuty relevant secondary data were collected from archives, report of the project and previous studies and refrences .The experimental design adopted was nested to assess the distance and season . Data analysis had been done using the computer program SAS (Statistical Analysis System) for distance and season . For questionnaire the data analyzsis by using statistical package of social science (SPSS) .Questionnaire was prepared for Ghadambaliya area , nineteen questions were used to collect the information such as ,age, occupation and level of education. In this questionnaire questions were about effect of vegetation cover deterioration and other benefits gained from mechanized rain fed farm and other set of questions about the expansion of mechanized rain fed farming for different reasons that affect in the deterioration of vegetation cover Interviews were done at Ghadambaliya

area with farmers , officials and rangers of National forests corporation Gedaref state.

-The results study revealed that environment and soil moisture had been affected by shelter belts.

-It was found that the main factors contributing to the soil moisture differences at the study area was distance from shelter belts .

-The study revealed that environment and vegetation cover had been degraded at Gedaref area .

-It was found that the main factors contributing to the deterioration of vegetation cover at the study area were expansion of mechanized rain fed schemes, illegal cutting , and over grazing.

- The impact of this had been indiscriminate destruction of vegetation cover , crop yield decline and decline of soil fertility.

For better rational use of the environment resources available in order to check the trend of deterioration vegetation cover, the following is recommended:

1. There is a need for coordination between concerned agricultural sectors .
2. Raise the awareness of the local farmers , encourage and support them to participate in planning to improve vegetation cover .
3. Shelter belts of 10 percent of the area round the agricultural schemes in rain fed areas should be enforced and implemented through mechanized farming corporation and forest national corporation .
4. Participation of mass media and other information service in environmental affairs must be developed extended and strengthened.

خلاصة البحث

ولاية القصارف من اوائل ولايات السودان التي بدأت بها الزراعة الاليه . هذا البحث عن اثر الزراعة الآلية علي الغطاء النباتي و اثر الأحزمة الشجرية علي البيئة في منطقة القدمبليه ولاية القصارف . أهم أهداف البحث هي معرفة الآثار التي تسببت و ساهمت في إزالة الغطاء النباتي بمنطقة القصارف . و من أهداف البحث معرفة الآثار السالبة لهذا التدهور علي النظام البيئي و حياة البشر بالمنطقة و من المعروف أن أراضي الغابات و الغطاء النباتي تتميز بخصوصيتها العالية و صلاحيتها لزراعة المحاصيل , إذا لجأ الإنسان إلي مساحات واسعة من الأراضي المغطاة بالغابات و الغطاء النباتي من اجل الزراعة التقليدية و الآلية. و ازدادت المشكلة اكبر لان هذا التدهور يتعلق بمورد طبيعي بطئ التجدد و بالذات في هذه المنطقة التي يقل فيها فرص تجدد الموارد بسبب زيادة السكان و حصولهم علي مصدر الدخل بأسهل الطرق كالقطع الجائر الغير مصرح والمصرح به لإنتاج كميات كبيرة من حطب الوقود والفحم , أضف إلي ذلك القطع الغير كامل للأشجار(عقر) بواسطة الرعاة , إن ممارسة الإنسان للنشاط الزراعي الغير مرشد قد اخل بالتوازن البيئي المتنوع الحيوي وبصفة خاصة الغابي المتوازن . طرق البحث للدراسة شملت جمع المعلومات من تقارير المشاريع والدراسات السابقة والمراجع اعتمدت تجربته علي تخطيط بعد المسافه من الاحزمه الشجرية وفصول او مواسم السنه وتحليل البيانات علي الكمبيوتر ببرنامج نظام التحليل الاحصائي .

الاستبيان شمل المزارعين بمنطقة القدمبليه وكانت الاسئله عن العمر , العمل ومستوي التعليم . واسئله اخري عن تاثير تدهور الغطاء النباتي , والفائده من الغطاء النباتي وتأثير التوسع في الزراعه الاليه المطريه بينت الدراسة التغيرات في المناخ والعوامل الإحيائية و التدهور في عناصر التربة و نقص في انتاج المحاصيل و الإنتاج الغابي .أوضحت الدراسة بان السكان متأثرين من إزالة الغطاء النباتي و الغابات. المزارعين أكثر تضررا من هذه المشكله , المزارعين راغبون و علي استعداد للمشاركة في أي برنامج يهدف لاستعادة استزراع الغطاء النباتي و الغابات و الأحزمة الشجرية , و سوف يساهمون في الحماية و الرعاية إذا التزمت جهات الاختصاص بتوفير البذور و الشتول في الوقت المناسب و الإرشاد المتواصل . المقابلة الغير رسميه كانت مع المزارعين والمواطنين بمنطقة القدمبليه، والمقابله الرسميه كانت مع شيخ قرية القدمبليه ، حارس الغابات وموظف الغابات , غابات ولاية القصارف.

- اثبتت نتائج دراسته تأثير البيئه والاحزمه الشجرية:
- وضحت دراسته العوامل الرئيسيه التي ساهمت في رطوبة التربه وفروقات بعد المسافه من الاحزمه الشجرية اثبتت دراسته ان البيئه والغطاء النباتي تدهورت بمنطقة القصارف.
 - اثبتت دراسته ان العوامل الرئيسيه التي ساهمت في تدهور الغطاء النباتي منها التوسع في الزراعه الاليه المطريه , القطع الجائر والرعي الجائر
 - اثبتت دراسته ان تدهور الغطاء النباتي ادي الي نقص انتاج المحاصيل و نقص في خصوبة التربه .
و افضل استعمال لمصادر البيئه لكي نمنع تدهور الغطاء النباتي نوصي بالاتي:
- 1- نحتاج الي تنسيق بين القطاعات الزراعيه المعنيه .
 - 2- رفع الوعي بين المزارعين المحليين وتشجيعهم .
 - 3- مشاركتهم في تحسين وتخطيط البيئه
 - 4- زراعة 10% من مساحه المشروع الزراعي المطري تطبق بالقوة بالتعاون مع الهيئه القوميه للغابات والزراعه الاليه المطريه
 - 5- مشاركت الوسائل الاعلاميه الجماهريه تنمي وتقوي لخدمة شؤون البيئه.

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FAO	Food and Agriculture Organization of the United Nation	20
RMF	Rain fed mechanized farming	36
SAS	Statistical Analysis System	40
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