

Dedication

To my parents, brothers and sisters.

To my wife Neamat.

To my lovely daughter Shahd.

To my favorite son Amar.

ACKNOWLEDGEMENT

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ABSTRACT

This study was conducted at the Rahad Agricultural Scheme (RAS) during the period 2003-2006. The main objective of this study was to investigate different environmental aspects and benefits created by forest plantations at the Rahad Scheme , also to evaluate the socio-economic benefits obtained from these forest plantations.

For data collection, secondary data was obtained from reports, records, related studies, meetings and discussions with officials, semi-officials, and villagers.

Group discussions with farmers to clarify some points were held. A questionnaire was prepared in Arabic language to collect the primary data, the target groups were foresters, researchers, farmers, forest guards and project employees.

Crop yield measurements were done from 0H-30H during season 2004-2005 and 2005-2006.

The results obtained from this study can be summarize as:

- Forest plantations at (RAS) satisfy the local needs, they produce sufficient fuel-wood, charcoal, building poles, and fencing materials.
- The removal of the natural forests to establish the agricultural schemes causes environmental problems that include:

The reduction in effective rainfall, wind erosion, increases the amount of evaporation and the appearance of gullies and "khors" drainage chanells .

- The effect of forest protection (sheltered area) extends to 30H.

- The environmental and health problems were associated with the uses of chemical fertilizers, pesticides, insecticides, irrigation and the flux of immigrant population.
- The study recommended that feather field research should be conducted to investigate the impact of forest plantations on the micro-climate behind forest by using a full set of meteorological equipments connected with a data logger as it has been done in Sweden.
- Raise the awareness of people about the important role of forest plantations in providing environmental and socio-economic services.
- To complete the planned area of forest plantations to 5% from the total area of the scheme, so 3% is recommended to be planted.
- Establishment of a shelterbelt of one row after 30 H by using *Cajanus cajan*.
- Adoption of crop distribution in relation to trees would minimize the adverse effect of seed eating birds.

ملخص الدراسة

أجريت هذه الدراسة في مشروع الرهد الزراعي في الفترة من 2003-2006م الهدف الأساسي لهذه الدراسة هو تقييم الآثار البيئية والإجتماعية والإقتصادية للغابات بمشروع الرهد الزراعي. المعلومات الثانوية تم جمعها من التقارير والسجلات، الدراسات السابقة ذات الصلة. وكذلك تم عقد عدة اجتماعات مع المسؤولين والإداريين بالمشروع وقاده القرى والمزارعين لتوضيح بعض النقاط المتعلقة بالدراسة. لجمع المعلومات الأولية تم إعداد استبيان باللغة العربية والفئات المستهدفة هي مفتشي وحراس الغابات، الباحثين والمزارعين وبعض موظفي المشروع. كذلك تم حساب إنتاجه المحاصيل الزراعية المزروعة بجوار الغابات من بداية الغابة وحتى 30 ضعف ارتفاع الأشجار في موسمي 2004-2005، 2005-2006 خلصت الدراسة إلى الآتي:-

- توفر الغابات الاحتياجات المحلية من حطب الحريق، الفحم، أعمدة المباني ومواد التزريب.
- أن إزالة الغابات الطبيعية والغنية من المنطقة بغرض إنشاء المشروع أدى إلى المشاكل البيئية الآتية:
- قلة فعالية الأمطار، تعرية التربة، زيادة نسبة التبخر وكذلك ظهور بعض الأخاديد والخيران بالمنطقة.
- كذلك توصلت الدراسة إلى أن المنطقة المحمية خلف الحزام (الغابة) قد تصل إلى 30 ضعف ارتفاع الأشجار :
- كما خلصت الدراسة إلى أن المشاكل الصحية ناجمة عن استخدام الأسمدة الكيماوية والمبيدات بأنواعها المختلفة حشائشيه كانت أم حشرية، كذلك الري والتدفق السكاني الكبير إلى منطقة المشروع.

أوصت الدراسة بعمل بحوث حقلية مستمرة لمعرفة أثر الغابات على المناخ الموضوعي خلف الحزام (الغابة) وكذلك باستخدام مجموعة كاملة لأنظمة قياس المكونات المناخية المختلفة كما هو معمول به في السويد . كما أمنت الدراسة على رفع الوعي البيئي بالنسبة للمواطنين وتبصيرهم بالخدمات الجليلة التي تقدمها الغابات بيئياً واجتماعياً واقتصادياً .

كذلك أوصت الدراسة بزراعة 3% من مساحة المشروع بالغابات لتكملة المساحة الموصى بها إلى 5% من المشاريع المروية . شددت الدراسة على تأسيس أحزمه ومصدات من صف واحد بعد 30 ضعف من ارتفاع الاشجار . باستخدام اللوبيا العدسي . وكذلك يجب تبني دورات زراعية بحيث أن المحاصيل مثل الذرة والدخن تزرع بعيداً عن الغابات وذلك لتفادي الطيور آكلة الحبوب .

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LIST OF ABBREVIATIONS

RAS	Rahad Agricultural Scheme.
FP	Forest Plantations.
GNP	Growth National Products.
FNC	Forest National Corporation.
UNHCR	United Nation High Commission for Refugees.

COR	Commission of Refugees.
SEHA	Social & Environmental Health Administration.
RFU	Rahad Farmer's Union.
DDT	Dichloro Diphenyl Dichloromethane.
UNDP	United Nation Development Programme.
FAO	Food & Agriculture Organization of the United Nation.
WHO	World Health Organization.
BNHP	Blue Nile Health Project.
IDA	International Development Association.
HTS	Hunting Technical Services.
RH %	Relative Humidity.
SD	Sudanese Dinars
UNEP	United Nation Environmental Programme.
UNESCO	United Nation Educational, Scientific, and Cultural Organization.
UNICEF	United Nations Children's Fund.