

DEDICATION

**To
My Great Prophet Mohamed (peace and prayers be
upon him)**

**To
My father, mother, brothers, sisters and all my family.**

**To
My wife and kids (Rawan, Mohamed and Ali)
With especial dedication for encouragement**

Acknowledgement

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Abstract

This study is conducted at the northern State, where Shirian Elshimal National Road is extending, connecting it with different parts of the Sudan. The road has great importance for all the Sudanese citizens, and it will connect the Sudan with Egypt in future.

The study investigated some aspects of the protection for the road against the moving sand problem.

Literature was collected from the theoretical and practical work from the relative offices .

The methodology used in this study was the physical (mechanical) and biological methods for controlling the effect of the moving sand on the road.

Results obtained from the study reveled that establishing barrier perpendicular to the wind direction sands will be deposited behind the barrier to a distance of about 15 – 30 meters. The depth of the sand behind the barrier is deeper and as you go further away the depth will decrease. The protection against wind blowing increased after establishing the plantation along the road.

The study recommended the use of specialized agencies and organizations to contribute to solving the problem of burring the road. Also the study recommended the establishment of plantations and shelterbelts along the road.

This should be anticipated by establishing mechanical barriers to help in protecting the seedlings of the biological barrier while they are young.

ملخص الدراسة

- عبد الخالق محمد الحسن
- حماية طريق شريان الشمال القومي من الرمال الزاحفة

أجريت هذه الدراسة بالولاية الشمالية، حيث ان طريق شريان الشمال القومي يمتد عبرها ويربطها مع مختلف المناطق بالسودان. هذا الطريق له فوائد كثيرة علي كل المواطنين السودانيين ويمكن ربطه بمصر في المستقبل.

الدراسة أوضحت بعض أوجه الحماية لهذا الطريق من مشكلة الرمال المتحركة. أدبيات البحث والنظريات والأعمال المطبوعة جمعت من بعض المصادر والمراجع.

الطرق المتبعة في الدراسة هي الطريقة الفيزيائية (الميكانيكية) والطريقة البيولوجية في تخفيف أثار الرمال المتحركة علي الطريق. النتائج التي استخلصت من الدراسة أثبتت انه عندما تقام حواجز متعامدة مع اتجاه الريح تترسب الرمال المتحركة خلف تلك الحواجز إلي مسافة تتراوح بين 15-30 متر، ويكون عمق الرمال خلف الحاجز أعمق ثم يتناقص شيئاً فشيئاً كلما ابتعدنا عن الحاجز، وقد تلاحظ أيضاً ان الحماية من الرمال الزاحفة قد ازدادت بعد زراعة الاشجار حول الطريق.

أوصت الدراسة بمشاركة الوكالات المتخصصة والمنظمات في المساهمة لحل مشكلة الرمال الزاحفة التي تدفن الطريق وكذلك تطور وسائل الحماية وإنشاء الأحزمة الواقية والمشجرات حول الطريق وهذا يجب ان يتحقق بواسطة إنشاء الحواجز الميكانيكية للمساعدة في حماية المغروسات والشتول (الحواجز البيولوجية) عندما تكون الشتول صغيرة.

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Abbreviations

ABRC	Authority of Bridge and Road Corporation
SERD	Shirian Elshimal rural Development
CSE`	Company of Shirian Elshimal
SENR	Shirian Elshimal National Road
PE	Potential Evapotranspiration
UNDP	United Nation Development Program
FNC	Forest National Corporation
ADB	African Development Bank
USAID	United State Aid
CM	Centimeter
SPP	Species
Fed	Feddan