بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / سامية زكى يوسف

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: لا يوجد

REHABILITATION OF DEGRADED SOIL BY WATER EROSION FOR SOME WADIS IN NORTHWESTERN COAST – EGYPT USING SOME PLANTS

(CASE STUDY-SLOPING SOIL)

Submitted By

Galal Mohamed Abd El-Hamed El-Sherbeny

B.Sc. of Agricultural Cooperative, Higher Institute of Agricultural Cooperative, 2000

M. Sc. in Environmental Sciences, Faculty of Graduates Studies & Environmental Research, Ain Shams University, 2018

A Thesis Submitted in Partial Fulfillment
Of
The Requirement for the Doctor of Philosophy Degree
In
Environmental Sciences

Department of Environmental Agricultural Sciences
Faculty of Graduates Studies & Environmental Research
Ain Shams University

2022

APPROVAL SHEET

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ABSTRACT

Hazards of soil erosion by rainfall are serious problems in Northwestern coast of Egypt (NWCZ) and lead to reducing the soil quality and increasing the degradation of soil resources. The present study includes field experiments for a one-year during the winter season of 2019/2020 in Wadi El-Raml area in the Northwestern Coast zone, NWCZ. The total treatments are as follow: Control without cultivation (C), barley without mulch cover (B), barley with mulch cover of rice straw of 0.5t.fed^{-1} (BM0.5), barley with mulch cover of rice straw of 1t.fed^{-1} (BM1), vetiver grass without mulch cover (V), vetiver grass with mulch cover of rice straw of 0.5t.fed^{-1} (VM0.5), vetiver grass with mulch cover of rice straw of 1t.fed^{-1} (VM1), Strip cultivation (vetiver grass – barley) (SVB), and Strip cultivation (barley - vetiver grass) (SBV), Six storms are effective during the study period as they caused runoff and consequently soil loss, The decrement percent runoff for different treatments varied from 31 to 72%. The runoff coefficient approaches 5.1, 3.5, 2.7, 2.3, 1.8, 1.5, 1.4, 1.9 and 2.2 % for (C), (B), (BM0.5), (BM1), (V), (VM0.5), (VM1), (SVB) and (SBV) treatments, respectively. The highest decrement is evident with the treatments cultivated by vetiver grass as compared to that cultivated by barley crop. The average reduction efficiency for soil loss due to cultivation by barley and vetiver grass on the sloping soil ranged from 43 to 57% and from 65 to 81%, respectively, compared with bare soil treatment. The soil loss ratio approaches 0.57, 0.48, 0.43, 0.35, 0.33, 0.29, 0.36 and 0.39 for (B), (BM0.5), (BM1), (V), (VM0.5), (VM1), (SVB) and (SBV) treatments, respectively. Fresh dry matter of Indian vetiver grass is

6.66 $t.ha^{-1}$. The percentage increment of vetiver grass fresh dry matter was greater than the percentage increment of barley biological yield.

In conclusion, the results suggested that vetiver grass is a promising feed resource for soil protection from water erosion hazards, and as well as, feeding animals under environmental conditions of Northwestern Coast of Egypt.

Keywords: Vetiver grass, land degradation, water erosion, soil loss, runoff, North Western Coast zone of Egypt

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