

附土壤團粒化劑對紅壤抗蝕性及種子發芽影響之研究

林信輝⁽¹⁾ 黃保維⁽²⁾ 許榮峰⁽³⁾

摘要

噴植工法之引進與應用於台灣迄今已三十餘年，噴植資材及噴植施工技術仍持續在改良與研發，而土壤團粒化劑係目前廣泛被應用之噴植材料。本研究選取由琉球引進，近年來常應用於921地震崩塌地噴植用之土壤團粒化劑為試驗材料，調配 1.63%、2.13%、2.63%、3.13%與對照組 0%等五種濃度配比進行試驗；在單純使用土壤團粒化劑而不添加其它資材的情況下，發現土壤團粒化劑噴附量濃度愈高，土壤 pH 值和幾何平均粒徑亦相對增大，且在低基質張力 (0~2bar) 時，保水性亦提高，但對飽和水力傳導度無顯著影響；然而當土壤團粒化劑濃度愈高，則紅土抗沖蝕性愈佳，但以百慕達草、相思樹為供試植物時，則種子發芽率及發芽勢皆相對降低。

關鍵詞：土壤團粒化劑、紅壤、發芽

A Study of Polisoil Spray on the Laterite Erodibility and the Influence of Plant Germination

Shin-Hwie Lin

Professor, Department of Soil and Water Conservation

National Chung Hsing University, Taichung, Taiwan 402, R.O.C.

Bao-Wei Huang

Graduate Student, Department of Soil and Water Conservation

National Chung Hsing University, Taichung, Taiwan 402, R.O.C.

Jung-Feng Hsu

Master, Department of Soil and Water Conservation

National Chung Hsing University, Taichung, Taiwan 402, R.O.C.

ABSTRACT

Hydroseeding has been applied for more than thirty years in Taiwan, its apparatus and materials have been continuously ameliorated and invented. However, currently the Polisoil (aggregating agent)

(1) 國立中興大學水土保持學教授

(2) 國立中興大學水土保持學研究所碩士生

(3) 國立中興大學水土保持學研究所碩士

that has been generally used is one of the main Hydroseeding materials . In this study , Polisoil was chosen as the tested specimen that has introduced from Ryukyu and has used in large-scale bare slope after 921 earthquake . Five different concentrations of Polisoil (0% , 1.63% , 2.13% , 2.63% , 3.13%) were sprayed on laterite . We find that the pH , mean diameter of aggregates and water holding capacity of laterite will increase with the raising concentration of Polisoil , however , the saturated hydraulic conductivity did not change significantly if we only used Polisoil without collocating other materials . With raising concentration of Polisoil , the erosion resistance will be better , but when Bermuda grass and Taiwan Acacia were chosen as the experimental plants , the germination percentage and the germination potential of plants will decrease.

keywords : Polisoil 、 Laterite 、 Germination

一、前言

土壤團粒化劑之引進緣由係因九二一大地震後，造成中部地區山坡地之崩塌裸露、水土流失、農作物受損等災害，加上每年平均約 2500 公釐的雨量，使得裸露的坡面嚴重沖蝕，造成土砂二次災害。而為達到快速植生綠化、穩定坡面及降低二次災害發生之程度，經由中琉文化經濟交流協會的相關技術提供，將土壤團粒化劑(Polisoil)噴植工法引進，並於台中縣新社鄉中和村中 95 線溪頭附近之道路兩旁崩塌邊坡，進行第一次的試驗噴植，雖歷經多次大雨，迄今無落石及土壤流失跡象且植生覆蓋良好。此項工法引進至今施工面積已相當廣泛，主要地點包括台中縣豐原、潭子、新社、太平與南投縣埔里、中寮、竹山、國姓鄉九份二山等地震後之崩塌地區，希望藉此工法之施工快速與抗沖蝕等特性，克服長久以來植生未完成前，裸露土壤每逢下雨便造成土壤流失的問題。

日本於琉球地區所採用之土壤團粒化劑體積濃度為 2.45%，而因台灣之地質與氣候環境條件與琉球地區不同，目前施工所採用之濃度配比僅是初步改進，體積濃度為 1.63%，而其相關研究尚未有詳細之試驗，故本研究擬運用土壤團粒化劑之抗沖蝕佳之特點，以紅土為試驗材料，針對土壤團粒化劑之濃度配比進行改良試驗，且觀察種子噴附土壤團粒化劑後之發芽情形，期能供日後土壤團粒化劑於紅土地區噴植施工之參考依據。

二、試驗材料、項目與方法

(一) 試驗材料

1. 供試土壤

(1) 採樣地點

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