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論文名稱: 土壤團粒化劑濃度對紅壤抗蝕性與種子發芽之研究

英文論文名稱: The Effect of Polisoil Concentration on the laterite Erodibility and Plant Germination

【中文摘要】

噴植工法之引進與應用迄今有近三十年，目前噴植機具與噴植材料仍持續在改良與研發中。本研究選取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，並以百慕達草、相思樹為供試植物，進行噴附後之土壤物理、沖蝕與種子發芽試驗，探討不同濃度的土壤團粒化劑對紅土保護功效與植物初期生長影響，期能提供此工法於施工設計與種子材料應用之參考。茲將結果摘要如下：

1.土壤團粒化劑施用於紅土，噴附濃度愈高，土壤 pH 值、幾何平均粒徑隨之增大，且於低基質張力（0□2bar）時，保水性亦提高，但對飽和水力傳導度無顯著影響。

2.經種子發芽與模擬降雨沖蝕試驗得知，土壤團粒化劑濃度越高，則紅土抗沖蝕性愈佳，種子發芽率與發芽勢愈低。土壤團粒化劑噴植於 B 處理（2.13%）下，對於紅土沖蝕控制與植物種子發芽情形均能達到其成效，應屬較佳之施工濃度配比。對於土壤沖蝕嚴重之地區可選擇大於 B 處理之濃度，以發揮較高之抗沖蝕能力；反之，需快速達到綠化植生地區可選擇低於 B

處理之濃度，以加速種子之發芽。

【英文摘要】

Spray planting engineering method has been applied for more than thirty years. The spray planting apparatus and materials have been continuously ameliorated and invented. In this study, Polisoil was chosen as the tested specimen. Five different concentrations of polisoil (0%, 1.63%, 2.13%, 2.63%, 3.13%) were sprayed on laterite, and Bermuda grass and Taiwan Acacia were chosen as the experimental plants. The rainfall simulator was applied to measure the soil erosion under different concentration treatments. The germination rate of Bermuda grass and Taiwan Acacia of Polisoil with different polisoil concentration treatments was also measured. The soil properties of different treatments were measured also. The results are summarized as following:
1.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.
2.The erosion of laterite, the germination percentage and the germination potential of plants will decrease with raising concentration of Polisoil. The best concentration of Polisoil was found to be 2.13%, which will control the soil erosion and will not inhibit the seed germination.