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論文名稱：泥岩挖方坡面植生工法之土壤保育功效探討

英文論文名稱：The Investigation of Different Vegetation

Engineering in the Soil Conservation Efficacy on Cutting Slope of
Mudstone Area

【中文摘要】

本研究依所收集泥岩地區之學術研究理論與整治實務資料，選取目前泥岩地區 主要應用植生工法，試驗其植被覆蓋與土壤保育功效，探討其適用性及改良方法等，期望能對於泥岩地區之植生復舊略盡綿薄之力。試驗結果摘要如下： 1. 混播植物材料試驗結果，山鹽菁、番石榴、青箱及賽芻豆生長較為良好，百喜 草及百慕達草因受青箱之被壓與競爭作用而生長較差，相思樹及黃野百合之初期生長狀況較差。苗木穴植試驗結果中鐵刀木及長穗木存活率最高，大葉桃花心木存活 率最低。2. 不同植生工法之試驗結果，植生覆蓋度以植生帶法及擋土柵配合截留束法最高，肥束網帶法最低。入侵植物數量及種類以擋土柵配合截留束法最多，而肥束網帶 法最少。各植生工法之保肥效果差異不大。3. 擋土柵配合截留束法之土壤水分保持能力較佳。4. 土壤硬度改良以肥束網帶法最佳，而擋土柵配合截留束法土壤硬度反而因容土 壓密增加。5. 在土壤保育功效上以擋土柵配合

截留束法最佳，而肥束網帶法最差。以試驗研究結果與野外調查之綜合評估，未來有關泥岩植生工法之試驗與建議如下：1. 建議於泥岩地區播用種子或栽植小苗進行植物馴化，以增加苗木移植後之成活率。2. 由試驗結果得出，減少青蘆之播用量，應可增加百喜草及百慕達草之成活數及覆蓋度。3. 施工單價以擋土柵配合截留束法最高，而植生帶法較為經濟。4. 各植生工法於初期土壤三相結構之改良上差異不大，仍應繼續觀察。5. 建議施工前先進行泥岩土層養分調查分析，以決定施肥之種類及數量並提高微量元素之有效性。

【英文摘要】

Base on the thereological studies about the soil and geological characteristics and successful field works of watershed mangement on the mudstone area before, this study was chosen some applied bioengineering methods to measure vegetative cover, soil conservative efficacy, advantages, aptness and improvement of vegetation engineering on mudstone area academically and practically. We wish to do something of vegetative restoration for mudstone area. The results of this study are summarized as follows: 1. On the materials of mixed sowing: Roxburgh Sumac, guava, Feather cockscomb and Siratro grow better than the others. Bahia grass and Bermuda grass grow worse because of the oppression by Feather cockscomb. Taiwan Acacia and Yellow Crotalaria grow worse in the beginning. On hole planting, Siamese Senna and Jamaica false-valarian grow well, but Honduras Mahogany doesn't. 2. Results of bioengineering methods: On the rate of vegetative cover, the methods of vegetation mat and embankment with interception bunch are better than the others. The

fertilizer method is worst. On the quantity and species of intrusive plants, the method of embankment with interception bunch makes most, and the fertilizer method makes fewest. The differences between the fertilizer conservation among all of the vegetation engineering methods in this study are not visible. 3. On the water content of soil: Using embankment with interception bunch is better. 4. On the improvement for soil hardness: The fertnet method is the best. Embankment with interception bunch raises the soil hardness because of the consolidation of backfill. 5. On the soil conservation efficacy: The method of embankment with interception bunch is the best The fertnet method is the worst. Evaluating the result of indoor experiments and field investigations, we suggest that

The following experiments and studies should be done in the future: 1. To make the livability of seedlings transplantation better, seeds and seedlings should be used for taming vegetation on mudstone. 2. Depending on the results of experiments, decreasing the number of Feather cockscomb seeds could be able to make Bahia grass and Bermuda grass grow better. 3. The unit price of construction, which of the vegetation mat method is more economical than others, of the method of embankment with interception bunch costs most. 4. The differences of improvement for structure of soil three-phase among all the vegetation engineering methods used in this study are not visible. Further observation is needed. 5. We suggest that the investigation and analysis nutrients of mudstone soil layer should be made before determining the species and quantity for fertilization to rise the efficacy of microelements.