

研究報告

琉球松菌根對煤礦棄土地土壤 與土壤溶液化學性質之影響

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【摘要】本研究為探討琉球松菌根對煤礦棄土地土壤與土壤水化學性質之影響。試驗地位於台北縣平溪鄉菁桐村煤礦，1989 年於該煤礦棄土地上栽植接種彩色豆馬勃(*Pisolithus tinctorius* (Pers.) Coker & Couch.)之琉球松(*Pinus luchuensis*)菌根苗，生長良好，設為植生地；未接種菌根菌之琉球松則完全無法於礦區棄土地生存，全數枯死，設為裸露地。琉球松菌根植生地與裸露地土壤之 pH 值皆為極酸性，凱氏全氮、有效磷含量、有機質之含量皆甚低，無機態硫含量甚高，裸露地之無機態硫含量(173.85 mg/g)較植生地含量(101.65 mg/g)為高，証實琉球松菌根對礦區棄土含硫量有極重要之影響。植生地與裸露地土壤溶液之 SO_4^{2-} 、 K^+ 、 Mg^{2+} 、 Ca^{2+} 及 Al^{3+} 濃度變化，隨著土壤深度增加而增加， PO_4^- 濃度過低無法測得， NO_3^- 、 F^- 離子濃度隨著土壤深度而降低，煤礦棄土地含有大量之 SO_4^{2-} 及 Al^{3+} 離子則較 1995 年之測定結果大幅降低。

Research paper

Influence of Luchu Pine (*Pinus luchuensis*) Mycorrhizae on Soil Chemical and Soil Solution Properties of Coal Mine Spoils

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【Abstract】 The purpose of this study was to investigate soil chemical and soil solution influenced by Luchu pine (*Pinus luchuensis*) with ectomycorrhizae on coal mine spoils. The study site was located in Jing-Torng, Ping-Shi village, Taipei county, north Taiwan. The coal mine was characterized by rugged topography and fragile geological formation. These harshly physical conditions together with the large amount of aluminum and sulfate in soil would increase soil acidity. Therefore, vegetation was very difficult to service in this site. In 1989, Luchu pines inoculated with *Pisolithus tinctorius*, as the plantation soil (PS), were planted and growth very well. However, those non-inoculated Luchu pines, as the bare-soil (BS), were all dead. In general, the pH of soil which collected from both PS and BS were very acid. Kjeldahl nitrogen, availability p and organic matter were also very low, but the contents of inorganic S were very high. The amount of inorganic S in BS (173.85 mg/g) was higher than those in PS (101.65

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