

科尔沁沙地流动沙丘造林后表层土壤有机碳和轻组有机碳的变化

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Dynamic changes of surface soil organic carbon and light-fraction organic carbon after mobile dune afforestation with Mongolian pine in Horqin Sandy Land.

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摘要 以流动沙丘为对照,研究了科尔沁沙地25年生和35年生樟子松人工固沙林表层土壤(0~15 cm)有机碳(SOC)和土壤轻组有机碳(LFOC)的变化.结果表明:流动沙丘造林后,粗沙含量明显降低,土壤极细沙和粘粉粒含量显著增加;SOC和LFOC含量均显著增加,但随土层加深趋于减少;流动沙丘造林显著增加了表层土壤的SOC和LFOC储量,且林龄越长, SOC和LFOC储量越高.人工林地0~15 cm层LFOC储量的增幅远高于SOC储量,说明流动沙丘造林对表层土壤LFOC的影响大于SOC.

关键词: 科尔沁沙地 流动沙丘 人工造林 土壤有机碳 轻组有机碳 樟子松

Abstract: This paper studied the dynamic changes of surface (0-15 cm) soil organic carbon (SOC) and light-fraction organic carbon (LFOC) in 25- and 35-year-old sand-fixing Mongolian pine (*Pinus sylvestris* var. *mongolica*) plantations in Horqin Sandy Land, with a mobile dune as a comparison site. After the afforestation on mobile dune, the content of coarse sand in soil decreased, while that of fine sand and clay-silt increased significantly. The SOC and LFOC contents also increased significantly, but tended to decrease with increasing soil depth. Afforestation increased the storages of SOC and LFOC in surface soil, and the increment increased with plantation age. In the two plantations, the increment of surface soil LFOC storage was much higher than that of SOC storage, suggesting that mobile dune afforestation had a larger effect on surface soil LFOC than on SOC.

Key words: Horqin Sandy Land mobile dune afforestation soil organic carbon light-fraction organic carbon *Pinus sylvestris* var. *mongolica*

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