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Seasonal and Monthly Field Soil Respiration Rate and Litter Fall Amounts of Kasuga-Yama Hill Primeval Forest

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Abstract : The seasonal (January, April, July and October) and monthly soil respiration rate and the monthly litter fall amounts were examined in the laurel-leaved (B_B-1) and Cryptomeria japonica (B_B-2 and PW) forests in the Kasugayama Hill Primeval Forest (Nara, Japan). The change of the seasonal soil respiration rate corresponded to that of the soil temperature. The soil respiration rate was higher in October when fresh organic matter was supplied in the forest floor than in April in spite of the same temperature. The seasonal soil respiration rate of B_B-1 was higher than that of B_B-2, which corresponded to more numbers of bacteria and fungi counted by the dilution plate method and by the direct count method by microscopy in B_B-1 than that of B_B-2. The seasonal soil respiration rate of B_B-2 was higher than that of PW, which corresponded to more microbial biomass by the direct count method by microscopy in B_B-2 than that of PW. The correlation coefficient with the seasonal soil respiration and the soil temperature was higher than that of the monthly soil respiration. The soil respiration carbon was more than the litter fall carbon. It was suggested that the soil respiration included in the carbon dioxide which was emitted by the plant root and soil animal, or that the litter fall supplied to the forest floor included in animal and plant litter.

Keywords : field soil respiration rate, forest soil, litter fall, mineralization rate
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