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Estimation of Carbon Uptake of Seoul City Street Trees in Seoul and Plans for Increase Carbon Uptake by Improving Species

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Abstract : Nine representative species of trees among all the street trees were selected to estimate the absorption amount of carbon dioxide emitted from street trees in Seoul calculating the biomass, amount of carbon saved, and annual absorption amount of carbon dioxide in each of the species. Planting distance of street trees in Seoul was 1,851,180 m, the number of planting lines was 1,287, the number of planted trees was 284,498 and 46 species of trees were planted as of 2013. According to the result of plugging the quantity of species of street trees in Seoul on the absorption amount of each of the species, 120,097 ton of biomass, 60,049.8 ton of amount of carbon saved, and 11,294 t CO2/year of annual absorption amount of carbon dioxide were calculated. Street ratio mentioned on the road statistics in Seoul in 2022 is 23.13%. If the street trees are assumed to be increased in the same rate, the number of street trees in Seoul was calculated to be 294,823. The planting distance was estimated to be 1,918,360 m, and the annual absorption amount of carbon dioxide was measured to be 11,704 t CO2/year. Plans for improving the annual absorption amount of carbon dioxide from street trees were established based on the expected amount of absorption. First of all, it is to improve the annual absorption amount of carbon dioxide by increasing the number of planted street trees after adjusting the planting distance of street trees. If adjusting the current planting distance to 6 m, it was turned out that 12,692.7 t CO2/year was absorbed on an annual basis. Secondly, it is to change the species of trees to tulip trees that represent high absorption rate. If increasing the proportion of tulip trees to 30% up to 2022, the annual absorption rate of carbon dioxide was calculated to be 17804.4 t CO2/year.

Keywords : absorption of carbon dioxide, source of absorbing carbon dioxide, trees in city, improving species
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