

Research Trends and Results

Initiatives for enhancing safety of street trees

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1. Introduction

There has been an increase in the number of street trees with large diameters and trees that have weakened with age because many years have passed since planting these trees. As a result, these trees sometimes become traffic obstacles when they or their branches fall because of strong winds such as a typhoon. Thus, measures have been taken, such as inspections to prune branches and remove trees that pose high risks. However, it is desirable in the future to establish a method to plant trees with a reduced risk of falling, using regular maintenance measures, and the redevelopment of street trees.

At the NILIM, after grasping the status of the fallen street trees and branches, along with their growth status, we attempted to clarify why they fell. We are examining an effective way for road administrators to maintain street trees, along with a maintenance method to reduce the occurrence of falling street trees and branches.

2. Status of falling street trees and branches and growth status of those trees

In the fiscal year of 2015, after performing factual investigations of falling street trees and branches based on media reports and comments from road administrators, we categorized the reasons that these trees and branches fell, as well as the characteristics of the tree species and tree shapes. Based on the number of media reports, we found that there has been an increasing tendency over the past ten years (Figure 1), with many cases involving zelkova, cherry, platanus, and willow trees.

We also collected data from inspections performed by road administrators to determine the unsoundness of street trees (defects in tree vigor, abnormalities in the structure of its body, etc.), and we extracted factors related to trees and branches falling classified by tree species and shape. In the data classified by tree shape, we found that there was a tendency for a street tree to become unsound if its diameter became larger, and abnormalities were confirmed in more than approximately 60% of the trees if the trunk circumference was 60 cm or larger (Figure 2).

3. Future development

In the future, we will estimate the occurrence factors for falling trees and branches, such as the tree species, tree shape, and type of planting area, and we plan to examine planting methods that deal with these factors (tree species that rarely fall, structures for planting areas that allow for the sufficient extension of tree roots, etc.),

along with better operation and maintenance methods (pruning to prevent branch falling, effective and efficient inspections, proper treatment for unsound trees, etc.).

Figure 1 Number of newspaper reports¹⁾ and number of typhoons that approached during year²⁾

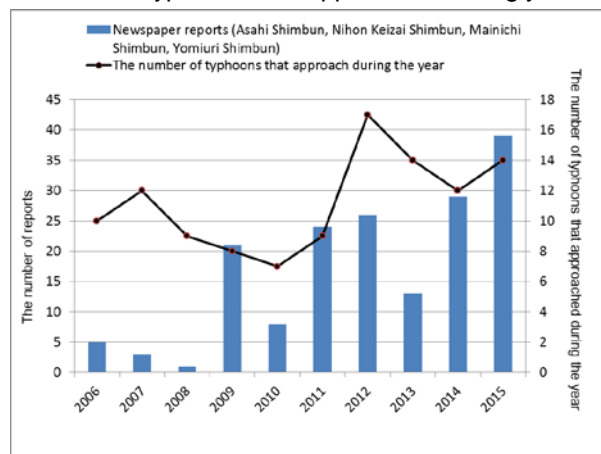
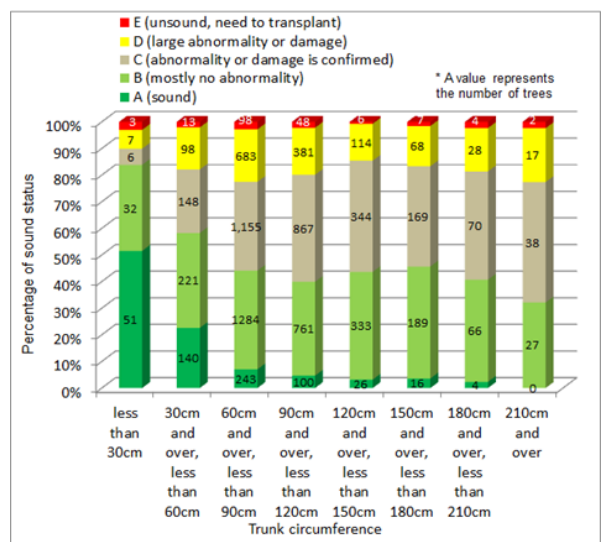


Figure 2 Soundness of street trees classified by trunk circumference (national highway example)



[References]

1) National Diet Library, Online Public Access Catalog (NDL-OPAC)

2) Web site of Japan Meteorological Agency

<http://www.data.jma.go.jp>