



Emerging tree diseases in Turkey

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Abstract: Over the last century, the number of reports of new tree diseases, as well as increasing severity of known tree diseases increased in most parts of the world. Increased disturbance by humans, establishment of monoculture forests and planting of exotic species, intensified trade in especially live plants are among main reasons for the increased incidence of diseases in forests and urban environments. Additionally, climate change is also influencing the distribution of pathogens by altering the balance between host, pathogen and environment. The main impacts of forest diseases include reduced value of forestry products, the costs of disease management such as removal of dead and dying trees and control measures to eradicate or reduce diseases. On the other hand, the balance within whole ecosystems can be altered due to loss or reduction in numbers of trees through impact of diseases, which would lead to further ecological damage. Especially if an alien invasive pathogen is causing the disease, the ecological impact can be more severe and irreversible. In urban environment, diseases can affect trees in the streets and parks as well as trees of significant cultural value thereby also posing social impacts, either through creating public safety risk or through causing social pressure on management activities. In Turkey, many forest diseases cause moderate damage in forest ecosystems, although these problems usually remain unrecognized by the forestry authorities for long periods. Chestnut blight, one of the most well-known forest tree diseases, is the only tree disease subject to intensified management practices so far. In contrast, Dutch elm disease, first introduced into Turkey in the 1940s has never been subjected to control measures, nor have the causal agents been determined on a comprehensive scale. While the impact of the disease resulted in the loss of elms (*Ulmus* spp.) in many regions, the ecological impact of these losses on Turkish forest ecosystems remains unknown. Numerous pathogens still seem to be entering urban areas and forests, amongst which boxwood blight and canker stain of plane (*Platanus* spp.) are recent examples. Canker stain of planes is currently affecting trees in urban amenity, heritage and many other situations in İstanbul. Despite the significant cultural values, all infected planes and nearby healthy trees must be removed in order to slow disease spread. Emerging tree/forest diseases in Turkey, however, are not limited to introduced alien pathogens. Heterobasidion and Armillaria root and butt rots, Dothistroma needle blight, Lophodermium needle cast and Diplodia shoot blight diseases are becoming more prominent, with expanding distributions and increasing damage in the last 25 years.

In this paper, we will summarize the forest diseases emerging in Turkey, in forest ecosystems and urban environments, discussing the possible reasons for the emergence and the likely consequences.

Keywords: Alien invasive forest pathogens, Climate change, Dothistroma needle blight, Armillaria root rot, Native plant pathogens