

DRIVERS OF OAK FOREST DECLINE IN ROMANIA

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Oak decline and dieback represent a severe forest issue in Romania, and the affected area has exceeded 150,000 ha during the period 2018–2025. The phenomenon is highly complex and is driven by a combination of predisposing factors (site conditions, management strategies, and endogenous tree characteristics), inciting factors (abiotic agents, such as severe droughts and frosts, and biotic agents, such as successive caterpillar defoliation), and contributing factors (pests and pathogens, particularly bark- and wood-boring insects, which are considered key factors in Europe).

The aim of this presentation is to highlight the main factors involved in the onset and development of oak decline in Romania and to identify the most efficient management actions.

The research was conducted mainly in north-eastern Romania, where this decline episode has been observed since 2018. In declining oak forests, experimental plots were established, and investigations were carried out on site and stand conditions, defoliation rate, and bark and wood pest infestation. Trees at different stages of decline were felled to evaluate the intensity of stem pest attacks and to identify the stem pest species. In addition, different types of traps were placed in the forest for buprestids (visual prism, panel, and Lindgren traps) and ambrosia beetles (Lindgren and Baker-style traps).

The results showed that, during the last decade, as a consequence of hot droughts, trees started to dry out from the top of the crown, and tree decline progressed rapidly, with mortality occurring within approximately two years after the first symptoms appeared (thin dead branches in the crown and epicormic sprouts on the stem). In the study area, several *Agilus* species involved in oak decline were identified, mainly

A. sulcicollis Lacordaire, occurring on branches in the crown and on stems with thin bark, and, less frequently, *A. biguttatus* Fab., on larger stems. Trap catches also allowed the flight activity of these species to be determined.

The succession of damaging agents involved in oak decline was confirmed as follows: *Agrilus* spp., cerambycids (*Rhagium* sp.), weevils (*Gasterocercus depressirostris* Fab.), xylomycetophagous scolytines (*Anisandrus dispar* Fab., *Xyleborinus saxesenii* Ratz.), and wood-decaying fungi.

The lack of efficient control methods for oak stem pests reported in the scientific literature highlights the need to promote silvicultural measures aimed at improving tree vigour and limiting the expansion of oak decline.

Keywords: oak, decline, *Agrilus*, defoliation, traps