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OAK HEALTH PROBLEMS IN THE LATVIA

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В статье рассматривается распространённость сильного усыхания дубов в Латвии. Представлены результаты трехлетних исследований распространения бактерии *Gibbsiella quercinecans* и *Brenneria goodwinii* в дубах. Отражено территориальное распределение дубовых насаждений.

The geographical coordinates of the extreme points of the Republic are as follows: latitude 58 ° 05 'N in the north, latitude 55 ° 40' N in the south, longitude 20 ° 58 'W in the west and longitude 28 ° 14' E in the east. In Latvia, common oak stands occupy about 22.5 thousand ha and are arranged in 11,500 plots (Fig. 1).

The pedunculate oak is commonly found across Europe, except for its coldest and hottest zones. It grows at sea level in the northern range and up to 1,300 m above sea level in the Alps. This oak is typically one of the dominant tree species in temperate deciduous mixed forests in Europe. Together with the sessile oak, the pedunculate oak is amongst the most economically important deciduous forest trees in Europe, providing high

quality hardwood for construction and furniture manufacture. This oak also has an important ecological role, as it supports many species of insects such as moths, wood-boring beetles and gall-forming hymenoptera.

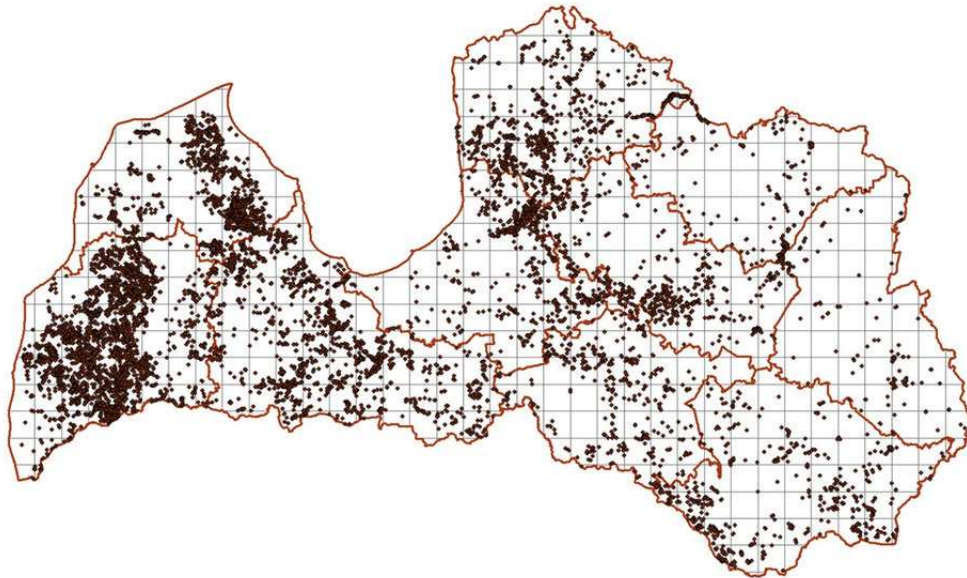


Figure 1

Oak dieback frequently affects pedunculate oak, causing chronic decline that may extend over decades. One of the diseases that may play a role in oak decline is mildew, which varies in intensity from year to year. More recently, a disorder known as Acute Oak Decline (AOD) which results in rapid dieback and mortality, has become apparent on mature trees in mid and south east England.

To determine the prevalence of AOD in oaks in Latvia, a total of 389 oak stands were surveyed in 2018, until the beginning of June. Several cases of signs of disease had been detected. As a result, bacteria were detected in 3 samples in the National Phytosanitary Laboratory. The disease was located in Kurzeme: in Talsi, Kazdanga, and Cīrava. It has already been reported that the acute decline of oaks in Latvia was first detected in 2017 in The Talsi Hillock Nature Park.

The most important symptom by which the disease can be recognized is the appearance of a dark, sticky fluid (exudate) from the bark of the infected tree that is released through small, vertical cracks. Initially, the release of dark exudate takes place 1–2 m above the ground, but then it can also be seen in the foliage, the release of the liquid usually occurs in March–June and October–November.

The acute decline of oaks is mainly caused by two bacteria: *Gibbsiella quercinecans* and *Brenneria goodwinii*.

Taking into account the ecological, economic and social significance of oaks in Latvia, the forestry industry surveyed oak forests in the territory of Latvia in order to assess the overall health status of oaks. The State Plant Protection Service (SPPS) has developed forest survey questionnaires for forest owners and forestry industry representatives. Both the employees of JSC "Latvijas valsts meži" (*Latvia's State Forests*) and The State Forest Service participated in the oak survey. Surveys were mainly conducted in Kurzeme and Zemgale, where there is a higher risk of bacterial spread.

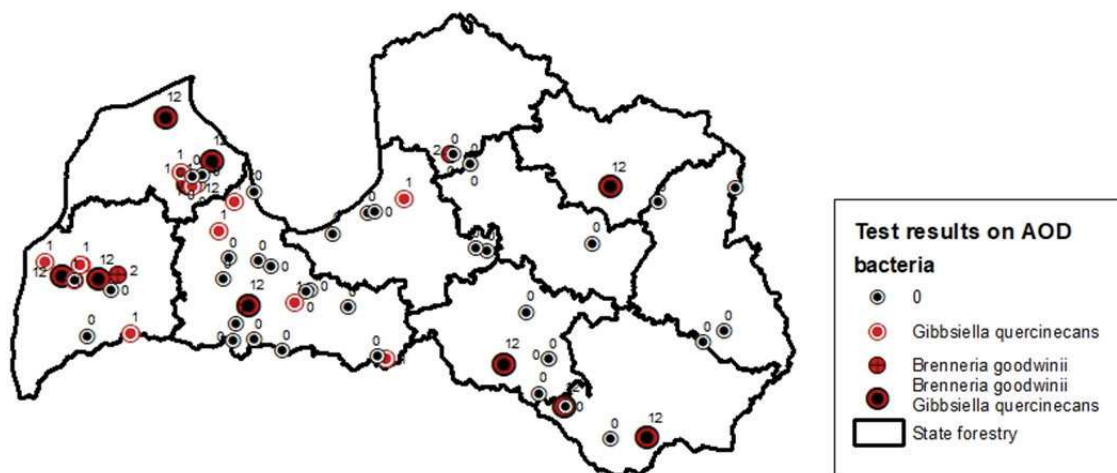


Figure 2

In total, 389 forest stands were inspected on June 1, and the disease-specific characteristics were detected in 21 trees. In total, 671 forest stands with the total area of 1,292 ha were inspected on 2018. In 2019 436 oak stands were inspected with an area of 999 ha, as well as 43 samples were collected and delivered to the laboratory. Bacterial prevalence in oak stands, in the two-year period of 2017–2019 is shown in Fig. 2.

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