The OSCAR PUBLISHING Services
American Journal Of Agriculture And Horticulture Innovations

VOLUME Vol.06 Issue04 2026
PAGE NO. 15-16
DOI 10.37547/ajahi/Volume06Issue04-02

The Effect of Sowing Dates on Seed Germination and Seedling Growth of Oak (Quercus L.) Species

N. Khojamuratov
Karakalpakstan Institute of Agriculture and Agrotechnologies, Tashkent State Agrarian University, Uzbekistan

Kh. Khamroev
Karakalpakstan Institute of Agriculture and Agrotechnologies, Tashkent State Agrarian University, Uzbekistan

J.S. Baltaniyazov
Karakalpakstan Institute of Agriculture and Agrotechnologies, Tashkent State Agrarian University, Uzbekistan

Received: 26 February 2026; **Accepted:** 20 March 2026; **Published:** 09 April 2026

Abstract: This article examines the effect of sowing dates on the germination and growth indicators of seedlings of common oak (Quercus robur) and chestnut-leaved oak (Quercus castaneifolia) under conditions of global climate change. According to the research results, seeds sown in November demonstrated the highest germination rates (70–74%) and survival rates. At the same time, seedlings of common oak sown in August showed the highest growth dynamics in terms of height and root collar diameter; however, their survival rate was found to be low.

Keywords: Climate change, oak, forest melioration, seed germination, sowing period, stratification, vegetation, root collar diameter, survival rate.

Introduction: In the context of accelerating global climate change and desertification processes, forest melioration measures aimed at ensuring ecological stability in regions—particularly the establishment of sustainable green cover composed of valuable tree species—are of great importance. Trees belonging to the genus Quercus L. are distinguished by their longevity, high bioecological resistance, and economic value. However, ensuring seed germination and producing high-quality seedlings that meet standard requirements remain among the key scientific and practical challenges in the widespread introduction of these species into cultivated forest plantations.

As with all tree and shrub species, determining optimal sowing periods is crucial for oak species. It is known that depending on the species of forest trees and shrubs, sowing can be carried out in all four seasons of the year; however, the main sowing periods typically fall in autumn and spring. The fruits (acorns) of common oak and chestnut-leaved oak can be sown in September–October, allowing for successful germination. As a result, this may contribute to accelerated seedling growth in the following spring (Table 1).

Table 1

Effect of sowing dates on seed germination of oak species (2024–2025)

No.	Species name	Germination in August (%)	Germination in November (%)	Germination in March (%)
1	*Quercus robur*	54	70	60
2	*Quercus castaneifolia*	–	74	66

As shown in Table 1, the germination of oak seeds directly depends on both the species and the sowing period. According to the experimental results:

- The highest germination rates for both oak species were observed in the November sowing period, which was identified as the most optimal. Germination reached 70% in common oak and 74% in chestnut-leaved oak. This can be explained by the natural stratification process that seeds undergo before autumn sowing.
- In the spring sowing period, germination rates were slightly lower compared to autumn sowing. Germination reached 66% in chestnut-leaved oak and 60% in common oak. This indicates that moisture retention in spring is an important factor for seed germination.
- August sowing: Experiments during this period were conducted only for common oak, and the lowest germination rate (54%) was recorded. Seeds of chestnut-leaved oak were not sown during this period, as they had not yet fully matured.

The sowing period significantly affects not only seed germination but also the subsequent developmental stages of seedlings. Observations conducted on seedling survival rates confirmed once again that November is the safest planting period for all studied species. During this period, the survival rate of chestnut-leaved oak seedlings reached 70%, while that of common oak seedlings amounted to 60%. In contrast, only 40% of common oak seedlings planted in August survived until the end of the second vegetation period, indicating a high risk of seedling mortality during summer planting.

However, the analysis of seedling height and growth energy revealed a specific advantage for the August planting period. Despite the lower survival rate, common oak seedlings planted in the third decade of August demonstrated record growth, reaching up to 51 cm in height. This показатель is approximately 1.7 times higher than that of seedlings planted in November, which reached up to 30 cm. At the same time, seedlings planted in the second decade of March (spring planting) exhibited the slowest growth dynamics, ranging from 24 cm to 28 cm.

The root collar diameter of seedlings also showed a proportional relationship with their height. In common oak seedlings planted in August, the root collar diameter reached 1 cm, fully meeting established standard requirements. In contrast, seedlings planted in November and March showed significantly lower values, ranging between 0.3 cm and 0.4 cm.

Based on the research findings, it can be concluded that if the primary objective is to achieve rapid growth and produce large seedlings in a short period, planting in August is the most effective option. However, to ensure массовое survival of seedlings and achieve a high percentage of green coverage, the first decade of November is recommended as the most optimal planting period.

REFERENCES

1. Baltaniyazov J. S., Kamalova N. B. Environmental and decorative properties of linden-leaved (Tilia cordata) under Karakalpakstan conditions // Modern ecological state of the natural environment and scientific-practical aspects of rational nature management. – 2017. – pp. 820–821.
2. Baltaniyazov J. S., Kamalova N. B. Growing and development of maple (Acer) tree in Karakalpakstan // Scientific and practical ways to increase ecological sustainability and socio-economic support of agricultural production. – 2017. – pp. 609–611.
3. Baltaniyazov J., Madraimov R. Agrotechnics of maintaining green cover on the dried bottom of the Aral Sea // Eurasian Journal of Academic Research Universal Index Library. – 2023. – Vol. 3, No. 10. – pp. 156–158.
4. Ovington J. D., MacRae C. The growth of seedlings of Quercus petraea // The Journal of Ecology. – 1960. – pp. 549–555.
5. Thomas F. M., Gausling T. Morphological and physiological responses of oak seedlings (Quercus petraea and Q. robur) to moderate drought // Annals of Forest Science. – 2000. – Vol. 57, No. 4. – pp. 325–333.
6. Welander N. T., Ottosson B. The influence of shading on growth and morphology in seedlings of Quercus robur L. and Fagus sylvatica L. // Forest Ecology and Management. – 1998. – Vol. 107, No. 1–3. – pp. 117–126.