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Збірник містить матеріали VI Науково-практичної конференції з міжнародною участю «PLANTA+. НАУКА, ПРАКТИКА ТА ОСВІТА». У збірнику опубліковано результати наукових досліджень провідних вчених України та іноземних фахівців з питань фітохімічного аналізу, стандартизації лікарської рослинної сировини, інтродукції, ресурсознавства лікарських рослин. Висвітлено питання технології та аналізу лікарських засобів рослинного походження, дієтичних добавок, лікувально-профілактичних та косметичних засобів. представлені фармакологічні дослідження з питань безпечності та застосування у клінічній практиці лікарських засобів рослинного походження. Розглянуто проблеми модернізації навчального процесу та орієнтації на дистанційне навчання у закладах освіти.

Матеріали представляють інтерес і можуть бути корисними для широкого кола наукових та науково-педагогічних працівників наукових установ, закладів вищої освіти фармацевтичного, медичного, біологічного профілю, докторантів, аспірантів, студентів, співробітників фармацевтичних підприємств та громадських організацій.

Друкується в авторській редакції. відповідальність за достовірність наданого для видання матеріалу несуть автори одноосібно. Будь-яке відтворення тексту без згоди авторів забороняється. Матеріали пройшли антиплагіатну перевірку за допомогою програмного забезпечення Strikeplagiarism.

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DAVIDIA INVOLUCRATA BAILL. (*NYSSACEAE* JUSS. EX DUMORT.) SPECIES IN GREAT BRITAIN: INTRODUCTION, ADAPTATION, PROSPECTS FOR CULTIVATION IN UKRAINE

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Key words: *Davidia involucrata*, introduction, adaptation, Great Britain

Introduction. Genetic resources involve the conservation and use of biological diversity of genes, genotypes, and plant gene pools at the molecular, population, species, and ecosystem levels. Among many environmental problems the preservation of the gene pool remains a priority, through introduction into the cultivated or natural flora of plants from other regions, which is especially important for the preservation of rare species in situ [3].

The purpose of this publication is to investigate the species of *Davidia involucrata* Baill. It is a valuable ornamental plant (still not widely cultivated) of the Nyssaceae. The aim is to evaluate the results of the adaptation of *Davidia involucrate* to cultural conditions in the southwestern region of Great Britain and the prospects for its cultivation in the Forest-Steppe of Ukraine. *Davidia* is now widely used as an ornamental plant in Western Europe and the United States, but is practically unknown in Ukraine.

Materials and methods. Such methods of searching for information as analytical review of literature and its generalisation were used. To highlight the results of our own research during 2023-2025, generally accepted methods of experimental biological research were used in the conditions of the city of Bath (South Somerset).

Research objects are 10, 12, 50 year old plants of *Davidia* in the planting of the Botanical Garden and city parks.

Climatic characteristics of research conditions (Bath, Great Britain)

Bath city – southwest of Great Britain, Somerset county – northeast part, 51’22’ N lat., 2’21’S.lat. The climate is temperate, oceanic, mild and humid. Average monthly temperature in January is 8 degrees Celsius (-3 degrees), July – 22 degrees (14 degrees). Average annual temperature is +10 degrees, absolute maximum – +28,8 degrees. Summer is moderate, with an average temperature of 18 degrees, the warmest is July with an average maximum temperature + 21 degrees. Winter is mild, rainy, windy; the temperature rarely drops below minus 10 degrees. The average annual rainfall is 1100 mm (550 to 3000mm).

Climatic conditions of Kyiv (Forest-Steppe of Ukraine), the M.M. Gryshko National Botanical Garden (NBG), to which we introduce *Davidia involucrata*. NBG - right bank of the Dnieper in the south-eastern part of the city of Kyiv (197 m above sea level), Zvirynets tract - 50’27’north lat., 30’31’east long. The climate is continental, winters are mild, summers are warm. The average monthly temperature in January is -3,8 degrees Celsius, in July it is +21,5 degrees. The average annual temperature is + 7,7 degrees. The average precipitation is about 640 mm throughout the year.

Position in the magnoliophyte system

Davidia involucrata Baill. is a genus of plants of the family *Nyssaceae* Juss. ex Dumort. Common name – Tupelo Family [5]. A family of 5 genera and 22 species, trees and shrubs. The circumscription and recognition of this family has been controversial. *Nyssaceae* has sometimes been included in a broadly circumscribed *Cornaceae*, but this appears to be phylogenetically incorrect [1]. *Davidia* includes 1 species. Native to China South-Central, China Southeast.

Davidia involucrata – other names are Handkerchief Tree, Dove Tree, Ghost Tree. Small purple *Davidia* flowers are gathered in inconspicuous inflorescences surrounded by a wrapping of large bright petal-like leaves (bracts) so that the inflorescence looks like a flower. Bracts, bracteoles, – ancient evolutionary formations that arose with the appearance of complex generative organs – inflorescences. The main purpose of bracts is to attract pollinating insects, combining vital functions of plants and insects. Research shows that the lengthening of the growing season due to climate change will have a predominantly positive impact, as a longer growing season will expand the opportunities for choosing to cultivate a variety of species, cultivars and genotypes [4]. *Davidia* was first discovered by a French botanist Armand David, who lived in China and found this exotic deciduous tree in 1869 in the mountains of Central China at an altitude of 2000 m above sea level. Henri Ernest Baillon described *Davidia* in 1871 based on the materials of Armand David. It was only in 1904 that the seeds of *Davidia* were brought to England, where it was propagated, selected and introduced into landscape gardening, and from there it spread to other European countries and North America, attracting great attention of scientists, breeders and gardeners due to its high decorative value.

Main morphological descriptors of *Davidia involucrata*

It is a deciduous tree up to 20 m high. The crown is broadly pyramidal, more rounded with age, sparse, with erect branches (in unfavorable conditions – a large bush). The tree is fast-growing, with annual growth of 25-30 cm. The trunk is dark gray, smooth or furrowed. Young shoots are pubescent, thick, olive green, later gray, glabrous. The buds are very large, rounded or slightly pointed, with few scales, red and shiny in winter.

Leaf arrangement is alternate, leaves are broadly ovate, 8-15 cm long and 7-12 cm wide, apex pointed, heart-shaped at the base, coarsely sharply toothed, pubescent on both sides with silky hairs, later glabrous above, shiny, similar to lime, bright green, bluish below, petioles 5-7 cm long. The inflorescence is an almost spherical head up to 2 cm in diameter, consisting of staminate flowers and one bisexual flower, at the base with two opposite ovate or elongated cream or pure white wrapping leaves (brackets), one of which is 10-18 cm long, the other half as long. The inflorescences hang in long rows under straight branches and are best developed in mid- to late May during mass flowering bisexual flower.

On windy days, the bracts flutter in the wind like pigeons or handkerchiefs, hence the name of the tree. The flowers are small, without a corolla and calyx, crimson-red in the buds (Fig. 1).

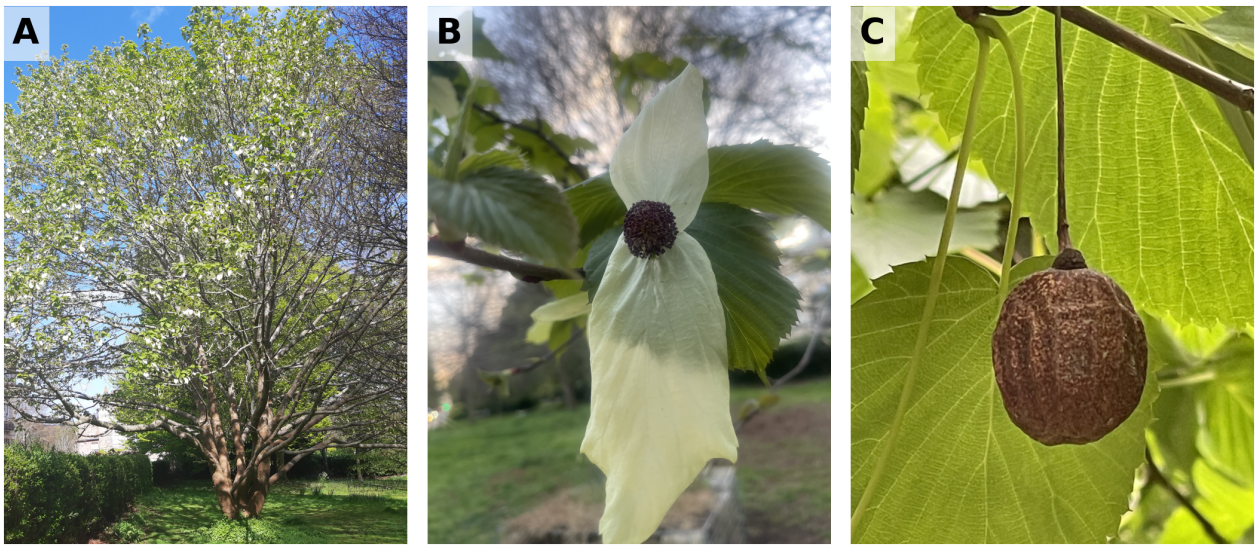


Fig.1 *Davidia involucrata* in Great Britain, 2025: the flowering tree, 30.04.2025 (A); the inflorescence formed, bracts colored, 30.04.2025 (B); the last year's fruit on this year's shoot, 27.07.2025 (C)

Plants grown from the seeds of species trees bloom 8-10 years after sowing the seeds. Currently, Davidia varieties have been created whose seedlings bloom 4-5 years after sowing, and vegetatively propagated plants of such varieties bloom even earlier. In the early 2000s, a low-growing variety 'Sonoma' was created in Britain, which blooms in the 3rd year after planting, and its bracts are twice as large as those of the original species.

Fruits are pear-shaped drupes 3.5-4.0 cm long, 2.5-3.0 cm wide, with a long stalk up to 9-10 cm, thickening at the base. Green fruits have a purple tinge, resemble walnuts; ripe fruits are brown, situated densely closer to the stalk. The surface of the fruit is slightly ribbed. The seed is a light brown ribbed stone 2.5-3.0 cm long and 1.2-1.5 cm wide.

Results and their discussion. Phenological phases of *Davidia involucrata*. The growing seasons of *Davidia* begins from the opening of vegetative buds in mid-April and ends in mid-November with fall of leaves. The fruits and endocarps are fully formed in October. After ripening only some of the fruit fall off, but numerous remain on the tree for a long time, often the winter and spring. Phenological data are important, they are biological indicators of global and regional changes in weather and climate and reflect the response of plants to abiotic stress. Observation provide an opportunity to assess the adaptation of introducers. They are especially relevant now during climate transformation and temperature stress [2].

Ecological features

Davidia is not picky about growing conditions, it can grow in different lighting conditions, even in partial shade, although abundant flowering and fruiting is observed in a sunny place. The plant is tolerant to most soils, but prefers light, loamy soils (with a pH of 5.0-7.5), good moisture, but it tolerates various environmental conditions. The winter hardiness of species trees is up to -20 degrees, it increases with age, and in the

‘Sonoma’ variety and a number of other selected genotypes, plants can withstand temperatures down to -30 degrees.

Cultivation prospects of *Davidia involucrata*

The decorative effect of *Davidia* is very high during spring, summer and autumn: unusual inflorescences with white bracts, dark green beautiful leaves and original fruits. In winter, the plant attracts attention with a luxurious crown, although without leaves, but often with a large number of unbroken fruits, looking attractive. The peak of decorativeness occurs during flowering and fruiting.

Why is it still unknown in Ukraine, except in Crimea, where it is grown in the Nikitsky Botanical Garden and occasionally occurs in single specimens in some parks? It should be noted that even in Western countries, and especially in the UK, where it has been known for a long time (from here its spread in Europe and North America practically began), *Davidia* is valued for its high decorative qualities and, obviously, as a “novelty” in gardening, not yet sufficiently propagated.

Regarding the prospects for the spread of *Davidia* in regions with different climatic conditions: each selected individual of the population retains its naturally inherent individual heredity traits of productivity, fruit quality or decorative properties, and stress resistance to biotic and abiotic environmental conditions. Thus, the climatic conditions of Ukraine, and in the context of global warming, the Right-Bank Forest-Steppe, are quite suitable for the introduction and cultivation of many plant species from these regions.

Conclusions. *Davidia involucrata*, a species of the *Nyssaceae* family, was studied in the conditions of the southwest of Great Britain with aim of introduction and cultivation in Ukraine. The position in the plant system, the history of introduction, and the main morphological descriptors are highlighted. A comparative description of the climate conditions of Ukraine (Kyiv) and Great Britain (Bath) is given. In the climate of Great Britain *Davidia* undergoes a pull cycle of seasonal development, and successfully bears fruit, forming fully fledged seeds. It is obvious that the lengthening of the growing season due to climate change will have a predominantly positive impact, as a longer growing season will expand the opportunities for choosing to cultivate a variety of species and genotypes [4]. It is shown that due to global warming, the conditions of Forest-Steppe of Ukraine may be quite suitable for the adaptation of *Davidia* [4].

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