



International Science Group

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XXVIII

**INTERNATIONAL SCIENTIFIC AND PRACTICAL
CONFERENCE "TRENDS IN SCIENCE AND PRACTICE OF
TODAY"**

Ankara, Turkey

June 01 – 04

ISBN 978-1-63848-650-3

DOI 10.46299/ISG.2021.I.XXVIII

TRENDS IN SCIENCE AND PRACTICE OF TODAY

Abstracts of XXVIII International Scientific and Practical Conference

Ankara, Turkey
June 01 – 04, 2021

Library of Congress Cataloging-in-Publication Data

UDC 01.1

The XXVIII International Science Conference «Trends in science and practice of today», June 01 – 04, 2021, Ankara, Turkey. 554 p.

ISBN - 978-1-63848-650-3

DOI - 10.46299/ISG.2021.I.XXVIII

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TABLE OF CONTENTS

AGRICULTURAL SCIENCES		
1.	Bomba M., Dudar I., Lytvyn O., Dudar O. FORMATION OF HARVEST VARIETIES OF SPRING BARLEY DEPENDING ON THE FERTILIZER	17
2.	Ivashchenko I. SYSTEMATIC AND PHYLOGENETIC RESEARCH THUJA PLICATA DONN EX D. DON	19
3.	Lykhochvor V., Bomba M., Bomba M. PRODUCTIVITY OF WINTER WHEAT DEPENDING ON THE FEEDING AREA	21
4.	Lykhochvor V., Bomba M., Bomba M. YIELDS OF WINTER WHEAT VARIETIES DEPENDING ON FERTILIZER AND SEEDING RATE	24
5.	Корнічева Г.І., Резніченко В.П., Звездун О.М. ВПЛИВ СОРТІВ ТА ДОБРИВ НА ФОРМУВАННЯ ПОКАЗНИКІВ ЕЛЕМЕНТІВ СТРУКТУРИ УРОЖАЮ ТА УРОЖАЙНІСТЬ НУТУ	27
6.	Остапчук О.С., Соваков О.В. ТИПИ ЕДАФОТОПІВ ЯК ОСНОВА ФОРМУВАННЯ ЦЕНОПОПУЛЯЦІЙ В ЛІСОВОМУ ГОСПОДАРСТВІ ДП «УМАНСЬКЕ ЛІСОВЕ ГОСПОДАРСТВО»	32
7.	Панасюк Р. ВПЛИВ НОВОГО ДОБРИВА НА ПОКАЗНИКИ ЖИТТЄЗДАТНОСТІ НАСІННЯ СОЇ	37
BIOLOGICAL SCIENCES		
8.	Martynova D., Pet'ko L. THE LIVE OAK: THE OFFICIAL STATE TREE OF GEORGIA (USA)	39
9.	Буюмбаева Г.С., Мырзабек К.А. ЖАСЫМЫҚ ӨСІМДІГІН ҚОСУ АРҚЫЛЫ ТҮЙЕ ЕТІНЕН ЖАСАЛҒАН КОНСЕРВІЛЕРДІ ДАЙЫНДАУ	49

THE LIVE OAK: THE OFFICIAL STATE TREE OF GEORGIA (USA)

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"An Oak tree is a daily reminder that great things often have small beginnings."

Matshona Dhiwayo

Our_Group Project researches Massachusetts and Georgia's official state plants, trees, and mammals (Fig. 1) [29; 23; 24; 32]. In this research paper we studied the state tree of Georgia. It is the live oak (Fig. 2). This tree, often called the evergreen oak, encompasses a number of oak tree variations characteristically exhibiting green foliage. The reason the tree is termed a live oak is because of its tendency to stay alive and green throughout the winter. [6].



Fig. 1. D. Martynova and E. Tsygankova.



Fig. 2. The Live Oak.

In a nod to Georgia's history, members of the National Society of the Daughters of the American Revolution were behind the efforts to adopt the live oak as Georgia's state tree. Specifically, in wording like no other state, members of the Edmund Burke Chapter, located in Waynesboro, urged the Georgia General Assembly to adopt the live oak as "the official tree emblematic of the State of Georgia." (Fig. 8), **video [1; 24]**.

Their efforts met with success, when, on February 25, 1937, the live oak was approved as Georgia's official state tree. Joint Resolution No. 14:

Whereas in many of the States of the Union some tree indigenous to the soil of the State has been chosen as an emblem of its sovereignty; and

Whereas hitherto the General Assembly of Georgia has made no such selection; and

Whereas the live-oak, being a tree indigenous to the soil of our State and especially flourishing along the Coastal plains and islands thereof where the first settlers and founders of this State resided, and which tree is so closely associated with our early history, and particularly with the lives of many famous Georgians such as General James Edward Oglethorpe, John Wesley and Sidney Lanier;

Be it therefore resolved by the House of Representatives of Georgia, the Senate concurring, that, at the suggestion and request of Edmund Burke Chapter, Daughters of the American Revolution, the live-oak be and the same is hereby adopted as and declared to be the official tree emblematic of the State of Georgia [5], Fig. 3, 4, 5, 6.



Fig. 3. James Edward Oglethorpe. Fig. 4. The live-oak. Fig. 5. John Wesley Fig. 6. Sidney Lanier.

The name *the live-oak* is used mainly in North America (Fig. 6), where evergreen oaks are widespread in warmer areas along the Atlantic coast from southeast Virginia to Florida, west along the Gulf Coast to Louisiana and Mexico, and across the southwest to California. Evergreen oak species are also common in parts of southern Europe and south Asia, and are included in this list for the sake of completeness. These species, although not having "live" in their common names in their countries of origin, are colloquially called live oaks when cultivated in North America [10], Fig. 7, 8.



Fig. 7. The map of North America.



Fig. 8. The map of Georgia.

Evergreen oak species are also common in parts of southern Europe and south Asia, and are included in this list for the sake of completeness. These species, although not having "live" in their common names in their countries of origin, are colloquially called live oaks when cultivated in North America. When the term live oak is used in a specific rather than general sense, it most commonly refers to the southern live oak (*Quercus virginiana*), the first species so named, and an icon of the Old South, but can often refer to other species regionally. According to the Live Oak Society the oldest southern live oak is believed to be the Seven Sisters Oak located in Mandeville, Louisiana with an estimated age of 500–1,000 years [10]. We can watch a **video** about the majesty of the living oak [26].

On the Gulf Coast, live oaks often support many types of epiphytic plants (plants that grow on top of another plant but does not depend on it for nutrition) such as Spanish moss (**see video [3; 4]**) which hangs in weeping garlands, giving the trees a striking appearance [9], Fig. 9.

Live oak is a fast-growing tree. It normally grows in low sandy soils near the Coast but can be found in a wide variety of sites. You can find live oak along stream banks or borders of salt marshes; along roadsides or in city lots; and commonly scattered in pastures or in mixed woodlands. Live oak is found growing in association with several other hardwoods, including the water oak (also known as the Spotted Oak or Possum Oak, Fig. 10), laurel oak, sweet gum tree (Fig. 11), southern magnolia, and American holly (Fig. 12) [5].



Fig. 9. Spanish moss. Fig. 10. The wateroak. Fig. 11. Sweet gum tree. Fig. 12. American holly.

Live Oak Park is a public park and recreation area of the city of Berkeley, California, it lies in the center of several North Berkeley neighborhoods, 5.5 acres of nature juxtaposed with facilities that form the beating heart of the area. It's a place where play areas, basketball and tennis courts, an indoor theater and the Berkeley Art Center share space with native oaks. Live Oak Park is situated here because of the many little creeks that flow from the Berkeley Hills the short way down to San Francisco Bay. These little creeks are more powerful than they look. As rising sea level filled the current Bay at the end of the last Ice Age, the creeks basically built what are

now the flatlands, by carrying rock and soil eroded from the earthquake-riven, still-rising hills [11], Fig. 13, **video [13]**.

Devendorf Park is listed in the Parks Category for Monterey County in the state of California. Devendorf Park is displayed on the "Monterey" USGS topo map quad. Devendorf Park is Carmel's central gathering place, from plein air painting,



Fig. 13. Live Oak Park (CA).



Fig. 14. The Live oak. Devendorf Park (CA).

Veterans and Memorial Day remembrances, to the annual tree lighting in the park. J. Frank Devendorf known as the Father of Carmel-By-the-Sea gave the land to the city; his grandson remains in Carmel-by-the-Sea – Jack Galante, a purveyor a bold red wines. The park occupies the block at Ocean and Junipero Avenues. This well-maintained urban oasis is shaded by several massive live oaks (Fig. 14). Flowers accent on of the entry points at the corner of Ocean and Junipero. Year-round, Carmel holds special events in the park to mark the holidays. There's breakfast with the Easter Bunny, the exciting Fourth of July Party, the Halloween Parade, and a festive Tree Lighting with Santa [2].

Live oaks are iconic for their spreading branches, incredible hardwood, and limbs draped with Spanish moss. They're fast-growing trees found near the coast, rivers, and streams but also in Georgia's historic neighborhoods, parks, and cities [16] (Fig. 15, 16).

Thus, the state tree of Georgia is the Southern live oak, or *Quercus virginiana* [17]. This majestic specimen is a familiar sight in historic neighborhoods of Georgia cities and towns (**see video [7]**). The trees in Savannah that most attract the attention



Fig. 15. The Live oaks Avenue in Georgia.



Fig. 16. Live oaks draped in Spanish moss..

of visitors are its hundreds of majestic live oaks draped in Spanish moss. Because of how strong and resilient it is, the live oak can live for hundreds of years with regular tree trimming and care.

This tree has a number of uses and distinct characteristics, making it important to people beyond the Georgian state boundaries.

Among the uses exceeding those typical of lumber is American butt shipbuilding. The reason why this state tree of Georgia is so useful in this craft is the low-hanging branches and relatively short height [6].

President George Washington (1732–1799) selected the name Constitution for the frigate. He chose from a list of names supplied by Secretary of War Timothy Pickering. Other suggestions included President, Congress, Defender, and Liberty [19], Fig.17, 18, 19.



Fig. 17. The Constitution, 2019. Fig. 18. George Washington. Fig. 19. The frigate in Boston.

The USS Constitution was one of the original three vessels built that launched the United States Navy. Launched in 1797 in Boston, “Old Iron-sides” was the ultimate achievement of 18th-century technology, the vessel took three years to complete and the \$300,000 price tag was well above the \$100,000 originally appropriated. The USS Constitution was one of the original three vessels built that launched the United States Navy.

'Her deck, once red with heroes' blood,
Where knelt the vanquished foe,
When winds were hurrying o'er the flood,
And waves were white below,
No more shall feel the victor's tread,
Or know the conquered knee; -
The harpies of the shore shall pluck
The eagle of the sea!' [20].



Fig. 20. A new commemorative stamp featuring Constitution (2012).

The subject of this poem, the U.S.S. Constitution [1] by Oliver Wendell Holmes [21] see Fig. 21, was first commissioned along with five other frigates in 1794 when Congress wished to protect merchant fleets from pirates and British and French interference. The most pivotal moment in its long and storied career occurred during

the War of 1812, when the ship engaged a British man-of-war off the coast of Nova Scotia. After almost 40 years of active duty, the Navy considered scrapping 'Constitution' in 1830 (Fig. 17, 22). What they hadn't planned for, though, was the growing public attachment to the vessel as a symbol of American freedom and endurance. A large public outcry was heard in favor of preserving the ship [20].

Around 2 p.m. on the afternoon of August 19, 1812, a lookout aboard USS Constitution spied a sail against the cloudy southern horizon. The newsflash brought the frigate's commanding officer, Captain Isaac Hull, and his charges "flocking up like pigeons from a net bed," according to one crewman.

It was HMS Guerriere again. The same frigate that Hull (Fig. 23) had skillfully eluded a month earlier near New York. The same warship that had been notorious for stopping American merchant vessels at sea and impressing their sailors, a practice that partly led to the declaration of war against Great Britain on June 18, 1812.

Guerriere opened fire but missed wildly. Constitution launched occasional shots, but Hull, to the unease of his crew, ordered them to hold most of their fire until they engaged the enemy in extremely close action. Around 6 p.m., the two ships drew alongside about 25 yards apart. Constitution rocked Guerriere with a full broadside. Hull, eager to get a better view of the action, split his dress breeches as he leapt atop an arms chest (Fig. 22).

As the Constitution came within range, Captain Hull ordered his gunners to hold their fire until their ship came directly alongside the Guerriere. Once abeam, Hull gave the order to fire the broadside. The effect of the barrage made a wreck of the Guerriere and a legend of the Constitution. As a British 18-pounder ball bounced harmlessly off the Constitution's live oak frame, one crew member remarked: "her sides are made of iron!" Though the victory had little strategic effect on the war, the battle provided the U.S. Navy with proof that it could match the Royal Navy's experienced commanders, and gave Americans their first famous warship: "Old Ironsides."

To commemorate the battle's 2012 bicentennial, the U.S. Postal Service unveiled a new commemorative stamp featuring Constitution, and the world's oldest commissioned warship took a historic victory lap around Boston Harbor. It was just the second time in 131 years that the frigate sailed under its own power [8], Fig. 19, 20.



Fig. 21. Oliver Wendell Holmes. Fig. 22. Battle. August 19, 1812.

Fig. 23. Captain Hull.

At last, below we give biological characteristics of the Live oak.

Leaves: Leaves are stiff leathery in texture. They are 2 to 5 inches in length and $\frac{1}{2}$ to 2 $\frac{1}{2}$ inches wide, elliptical and concave, curling underneath at the edges. The upper surface is dark shiny green, and the underside is dull grayish green. Leaves remain on trees through the winter, falling as new leaves emerge during the spring (Fig. 24) [14], video [12].

Twigs (Fig.25, 26): The twig of the live oak is described as slender and gray, and it possesses an abundance of budding flowers. These blossoming beauties of the state tree of Georgia appear in March through May. The bark of the evergreen oak is red and scaly, tending to turn to a darker blackish hue as the season progresses [6].



Fig. 24. Live oak leaf. Fig. 25. New leaf buds peeking out. Fig. 26. Live oak twigs.

Flowers and pollination: On leafing-out live oaks male catkins are hard to overlook, but unless you know what you're looking for you may not find female flowers, which will mature into the future acorns. They're tiny, greenish things in the axils of expanding new leaves toward the tips of new branches (Fig. 27).

In that picture (Fig. 27) the green, vertical column at the left is a leaf petiole, so you can see how small the female flowers are. Oak female flowers bear no corolla or stamens. The three in the picture consist only of cuplike calyxes beneath spherical ovaries. Atop each ovary arise three styles, each with a sticky stigmatic area where pollen is supposed to land and germinate.

The flowers, typical of oaks, are catkins that hang down 2–3". They appear in very early spring and dust the countryside with yellow pollen. Pollen is dispensed by wind during April (Fig. 28) [14].



Fig. 27. Pollination.

Fig. 28. Live oak flowers.

Fig. 29. Live oak bark.

Bark: The bark is dark brown to red-brown to gray. It is thick and longitudinally furrowed, eventually becoming blocky (Fig. 29).

Fruit: Acorns are $\frac{3}{4}$ to 1 inch long, broadest at the base to almost uniformly wide and rounded out to the pointed tip. The area outside the cap is brownish-black, or purplish-black, but the $\frac{1}{4}$ of the acorn within the cap is a lighter brown color (Fig. 30, 31, 32). Acorns occur solitary or in clusters of three to five nuts. They are sweet and edible and a preferred food source over other types of acorns by many types of wildlife [14], **video** [22].



Fig. 30. Live oak leaves.



Fig. 31. Green acorns.



Fig. 32. Live oak acorns.

Systematics of Live Oak

Kingdom: Plantae – plantes, Planta, Vegetal, plants

Subkingdom: Viridiplantae – green plants

Infrakingdom: Streptophyta – land plants

Superdivision: Embryophyta

Division: Tracheophyta – vascular plants, tracheophytes

Subdivision: Spermatophytina – spermatophytes, seed plants, phanérogames

Class: Magnoliopsida

Superorder: Rosanae

Order: Fagales ,

Family: Fagaceae

Genus: Quercus L. – chêne, oak

Species: Quercus virginiana Mill. – live oak [16], **video** [15].

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