Egyptian Journal of Archaeological and Restoration Studies
An international peer-reviewed journal published bi-annually
www.ejars.sohag-univ.edu.eg

Original Article

BOTANICAL ANALYSIS OF TUTANKHAMUN'S FUNERAL BOUQUETS

Hamdy, R.[1(*)] & Andreozzi, F.[2]

[1]*Botany & Microbiology dept., Faculty of Science, Cairo Univ., Giza; Biological Sciences dept., Faculty of Science, Galala Univ., Galala, Egypt*
[2]*PhD Candidate, Civilization and Forms of Knowledge (Egyptology) dept., Pisa Univ., Italy;*
[*]*E-mail address: rhamdy@sci.cu.edu.eg*

Article info.

Article history:
Received: 21-5-2025
Accepted: 12-1-2026
Doi: 10.21608/ejars.2026.499295

Keywords:
Bouquets
Ethnology
Morphology
Mythology
Olive
Persea

EJARS – Vol. SI (1) – April 2026: SI 75-SI 88

Abstract:
This study investigates a selection of floral bouquets discovered in the tomb of Tutankhamun, which were exhibited in the Egyptian Museum (Cairo) and subsequently transferred to the Grand Egyptian Museum (GEM), Giza. The analysis identified five species of flowering plants with mythological and ethnobotanical significance, belonging to five genera and five families. Plant identification was based on the gross morphology of various organs, including leaves and fruits. The results of the observations conducted on these objects are presented below, with a particular focus on identifying the plant species used and analyzing their methods of manufacture. These findings are then discussed in comparison with other parts of the same bouquets, which are now dispersed across various museums.

1. Introduction

Since ancient times, the Egyptians have demonstrated a deep appreciation for flowering plants, skillfully arranging them into bouquets and garlands for various ceremonial purposes. These decorative floral arrangements held symbolic significance in joy, mourning, and triumph rituals. The selection and diversity of plant species used in these arrangements often reflected changes in natural vegetation and may indicate the introduction of new flora during different cultural periods. In this context, a bouquet denotes a meticulously assembled collection of plant elements—branches, leaves, flowers, or fruits—chosen for their visual appeal, including size, color, and scent. The art of bouquet-making involves specific techniques, such as twisting, braiding, and wrapping. This paper highlights the aesthetic and cultural significance of this ancient practice.

2. Mythic Significance of the Bouquet

3.1. *Funerary context*

Floral bouquets held important symbolic significance in the funerary practices of ancient Egypt, embodying both ritual and mythological meanings. They were frequently used as offerings during burial ceremonies and subsequent commemorative festivals in the necropolis. Examples of bouquets in the Theban tombs depicted as adorning the funerary boat or equipment during the burial rituals are frequent. Bouquets made of papyrus and (possibly) poppy flowers appear on the top and the end of Neferhotep's coffin as it is transported to the tomb (42, pl. XX) [1]. Similar arrangements decorate the model boat and the jar stands during the funeral procession of Userhet, along with garlands (25-26; pl. XIII) [2]. Mounted bouquets are also depicted in front of the coffins of Nebamun and Ipuki (TT 181), during scenes where two women perform lamentations. A priest carries out a purification ritual [3], fig. (1). A comparable, though more damaged, scene appears in the tomb of Ramose (TT 55), where a mounted bouquet is shown in front of his anthropoid coffin [4].

Figure (1) mounted bouquets used during a funerary procession from TT 181

The texts accompanying New Kingdom iconographic sources highlight the importance of floral offerings as essential sustenance for the deceased *Ka*. In his tomb (TT 85), Amenemheb, "Tenant of the soldiers," receives bouquets from his son and another family member, specifically for his *Ka* (Urk. IV, 915.12-916.11) [5]. Likewise, bouquets are brought to Amenmose, Steward in the Southern City, for his *Ka* (Urk. IV, 1022.15-1023.6; TT 89). Another Amenmose, Captain of Troops and Eye of the King in Retenu, is depicted similarly: seated behind a table of offerings, he receives a bouquet of Amun for his *Ka* from his son, a *wab* priest of Amun (TT 42) [6]. The sculptor Ipuy and his wife are also shown seated as their children present them with short bouquets, integrated into the broader food offering, suggesting that they played a dissimilar function (42; pl. XXV) [2]. These scenes highlight the ongoing need for such offerings after death, as nourishment for the *Ka*. The connection of the bouquets and the *Ka* of the deceased seems to be confirmed by the fact that in some tombs (Kha'emhat, Amenhotep-si-se), traditionally reserved for the tomb owner, a chair was piled with floral arrangements, suggesting that the bouquets stood in for the departed in a subtle allegory of absence and death, as indicated by Brovarski [7], fig. (2). In the archaeological experience, these arrangements were also commonly found placed in the burial chamber (e.g. tomb of two sculptors at Thebes), affixed to the four corners of the sarcophagus [8,9].

Figure (2) mounted bouquets piled on the chair as a "substitute" of the receiver person (from the tomb of Kha'emhat) [7].

The deeper symbolic functions of these bouquets have also been examined by Mostafa, who investigated the religious significance attributed to specific plant species. Each had a distinct significance [10]. Papyrus, for instance, was linked to the goddess Hathor, while lotus flowers, symbols of renewal and rebirth, were sacred to the god Nefertem. According to Mostafa, floral bouquets were not just decorative; they were mythologically charged offerings crucial to securing the well-being of the deceased in the afterlife [10]. Further, because plant materials were easy to gather from gardens, the practice of offering bouquets was widespread across different social classes, as noted by Barakat; bouquets provided an accessible yet meaningful tribute, available to nearly everyone [11]. Together, these observations reveal the complex layers of meaning embedded in the practice of floral offering. More than simple gifts, bouquets served as artistic expressions of grief, religious devotion, and hope for life beyond death.

3.2. *Divine and royal use*

Beyond funerary contexts, floral bouquets in ancient Egypt held significant importance in both divine worship and royal ceremonies, reflecting their deep symbolic and ritual value across religious and political domains. Presenting bouquets to the king served not only to invoke divine protection, stability, and victory, but also, as Dittmar suggested, to express loyalty to him and as an honorific gesture. This explains why bouquets appear during events such as royal victories or enthronements [12]. A notable example is found on the north colonnade of the first court at Medinet Habu, where Ramesses III is shown in his chariot with Asiatic captives, greeted by officials offering bouquets [13]. This tradition continued into the Ptolemaic period, when priests presented bouquets to returning victorious kings as a sign of allegiance and gratitude, reinforcing the connection between priesthood and royalty. Derchain describes how, even during the Roman period, floral offerings maintained a structured format, as seen during Emperor Vespasian's visit to the Serapeum in Alexandria [14]. These elaborate and symbolically charged arrangements were visual affirmations of divine favor and royal power. The gesture is also documented in the tomb of Nebamun (TT 90), where the tomb owner is depicted offering Syrian prisoners to the king for his *Ka*, while holding a papyrus bouquet (33, pl. XXVIII) [2]. A similar gesture appears later in the statue of the priest Hor (Kairo CG 42230), which dates to the third intermediate period, approximately the 9th century BC. In this statue, Hor is shown presenting a bouquet of the Lord of Thebes to the king during his enthronement, a symbolic act associated with loyalty, protection, and wishes for a prosperous reign, reinforcing the symbolic themes of allegiance and royal blessing [12,15]. Likewise, Amenhotep, Prophet of Amun, is shown offering a mounted bouquet to the king after presenting goods produced for temple rituals, accompanied

by a prayer for divine favor (12–13, pl. XI, TT75) [1]. Bouquet offerings also featured prominently in temple rituals. Priests and kings regularly presented them during daily liturgies and major festivals. For example, at the Festival of Min in Medinet Habu, mounted bouquets adorned the platform bearing the god's image, as well as the offering table before him (Medinet Habu IV, taf. 200). Similarly, floral arrangements embellished the offerings made to Amun-Ra during the final day of the Opet Festival (II, pl. 198) [16], and decorated the shrine of Sokar's bark during his festival at Medinet Habu (taf. 221) [17]. The Valley Festival also placed a significant emphasis on bouquet offerings [18]. The scale of such offerings is evident in *P. Harris I*, which lists thousands of bouquets dedicated to religious festivals: 3.100 mounted bouquets, 15.500 perfumed flower bouquets, 32.140 waterlily bouquets, and 68.200 papyrus bouquets for the Amun and Opet festivals (P. Harris I, 21a) [19]. Even more remarkable numbers are recorded for the rituals instituted by Ramesses III: 483.000 papyrus bouquets (P. Harris I, 36b, 12) [19], and 1,150.000 *rnp.wt* bouquets (P. Harris I, 37a, 8) [19]. Additional offerings include bouquets for the Nile (114.804 units; P. Harris I, 40b, 4-5) and for Ptah (21.000 units; P. Harris I, 56a, 9-10) [19]. Mounted bouquets are also found among the daily offerings at Medinet Habu [20] (KRI V, 129, 8) [21]. Van der Walle observed that, during the New Kingdom, offering bouquets to Amun became an essential element of royal temple rituals [22]. Further, Sauneron also noted the ritual offering of bouquets to Khnum-Re at Esna, especially after the Nile inundation, when the flowers used were seasonal and fragrant, reflecting a reverence for both divine provision and the cycles of nature [23]. Täckholm & Drar observed that bouquets were commonly placed behind divine statues and featured among offerings during temple festivals [9]. They also played a decorative role in temple architecture, symbolically integrated into sacred space, fig. (3). Kantor argued that some temples had official positions dedicated to preparing these floral offerings. Remarkably, she showed that bouquets were sometimes "given" by deities to chosen worshippers, who would then take them home as sacred tokens of divine interaction, a personal blessing, and spiritual reward [24].

Figure (3) an offering table carrying small bouquets to Osiris, from the two Ramesside tombs at Thebes [2]

Outside the temple, private individuals also offered bouquets to the gods or deified kings to seek favor. These scenes are frequently depicted in Theban tombs. Neferhotep, Chief Scribe of Amun, is shown presenting a waterlily bouquet before the naos of Osiris and Hathor, while his wife Meritra follows with a papyrus bouquet and a sistrum (54-55; pl. XXX) [1]. In another scene, Neferhotep offers both a mounted bouquet and a waterlily bouquet to Amenhotep I and his mother, patron deities of the necropolis. The accompanying inscription specifies the vegetal nature of the offerings (*rnpj.t*, the *ḫw* of Punt, waterlily flowers) and includes a prayer for sustenance for his Ka (61-62; pl. LI) [1]. A similar image is found in Userhat's tomb, where his wife offers a papyrus bouquet to Osiris alongside family members, with bouquets also adorning the god's naos and included among the food offerings (9; pl. V) [2]. Together, these examples underscore the central and multifaceted role that floral bouquets played in ancient Egyptian religious and royal culture. More than decorative objects, they were potent symbols of loyalty, piety, divine favor, and spiritual continuity.

3. Components and Structures of Bouquets in Ancient Egypt

Floral bouquets are attested throughout the ancient Egypt entire history, exhibiting remarkable diversity in both composition and structure. These variations reflect shifts in cultural customs, religious symbolism, and social stratification. Over the centuries, bouquets evolved in their form, materials, and symbolic function, ranging from simple plant clusters to elaborately crafted ceremonial arrangements. For the earlier periods (the Old and Middle Kingdoms), the available sources are predominantly iconographic, although scattered twigs have occasionally been discovered in tombs dating to the Middle Kingdom [25,26]. Bouquets from the Old and Middle Kingdoms are generally quite simple in design, although a higher level of complexity may be obscured by a stylized mode of representation. During this period, bouquets are typically depicted as consisting solely of waterlily or papyrus flowers, usually represented by three stems tied together with a vegetal strip or blade of grass at one or two points perpendicular to the stems (figs. 1-25) [12]. Alternatively, the stems of waterlily flowers spiral around those of papyrus, as it is found in the mastaba of Kagemni (6th dynasty). A dramatic transformation in bouquet manufacturing occurs during the New Kingdom, when its structure becomes significantly more complex. Firstly, the number of plant species employed increases substantially. Based on the extensive review of the iconographic sources compiled by Dittmar, the following species appear to have been used in

bouquet production: waterlily flowers (white and blue varieties), papyrus, cornflower, chrysanthemum, poppy, bindweed, mandrake (fruits), and persea (fruits and leaves). Archaeobotanical analyses of materials predating the Ptolemaic period have at times confirmed these identifications and even expanded the list [12]. According to these studies, the following species were included in New Kingdom bouquets: leafing and flowering branches of persea (*Mimusops laurifolia* (Forssk.) Friis.), olive (*Olea europaea* L.), Assyrian plum (*Cordia myxa* L.), grapevine (*Vitis vinifera* L.), sycamore fig (*Ficus sycomorus* L.), toothbrush tree (*Salvadora persica* L.), a Rosaceae species (possibly *Malus* sp.); pomegranate fruits (*Punica granatum* L.), flowerheads of Egyptian acacia (*Acacia seyal* Delile), petals of marshmallow (*Alcea rosea* L.), flowering twigs of Indian sphaeranthus (*Sphaeranthus suaveolens* (Forssk.) DC.) and *Ceruana pratensis* Forssk.; culms of common reed (*Phragmites australis* (Cav.) Trin. ex Steud.) and papyrus as structural supports; and strips of date palm (*Phoenix dactylifera* L.), doum palm (*Hyphaene thebaica* (L.) Mart.), halfa grass (*Desmostachya bipinnata* (L.) Stapf), and papyrus for binding (p. 11, fig. 12; 166, fig. 152 [27-29]. Twigs of sweet clover may also have been present in the tomb of Kha, though their identification remains tentative (caption of fig. 12) [27]. The involucre of a cornflower has likewise been identified as possibly part of a bouquet [29]. This overview highlights not only the apparent increase in decorative plant species compared to previous periods but also suggests that common reed may have supplanted papyrus as the more frequent (and perhaps more suitable) structural support. Bouquet construction methods also appear increasingly diverse and complex during the New Kingdom. It is within this period that textual attestations of the two most used ancient Egyptian terms for "bouquet" first appear: *ꜥnḫ* and *ms*. According to the *Wörterbuch der ägyptischen Sprache*, *ꜥnḫ* (Wb I, 204.3-5) Erman & Grapow is translated as "bouquet" [30]. It probably denoted mainly simple or unmounted bouquets, but at least once has been found coupled with the determinative M240 (), and on this occasion must have indicated a mounted (or formal) bouquet [31]. Conversely, *ms* (Wb II, 136.1) [30] specifically refers to mounted bouquets since it is marked by the determinative (M240) read in the same way, suggesting it as the main word to indicate formal (or mounted) bouquets. The word *ꜥbw*, instead, suggested by Keimer (1924: 123-5), Keimer also to indicate big (formal) bouquets, take its denotation as an extension of its original meaning as "lettuce", a vegetable whose shape recalls the one of a bouquet, but the term also possibly maintains a certain link with the latter as part of the composition of the bouquets it indicated [32]. Although a more extensive search for its attestations would be necessary, the word may then be proposed to be a specific case of formal bouquet. It is possible instead to suggest that the opposition *ꜥnḫ-ms* may have broadly corresponded to two primary categories of bouquet manufacture in the New Kingdom: unmounted and mounted bouquets. Finally, a third word, *ḏdm.t* (Wb 5, 634.7-18), Erman & Grabow may have indicated bouquets without an internal support or core of culms. The word indeed was generically used to indicate a "heap" of a certain material and may be translated as "bundle" of vegetal material when coupled with M2 () [30]. To the *ꜥnḫ*-group, long unmounted bouquets similar to those from earlier periods can be included. They are still depicted as composed of rigid papyrus culms forming a central core, spirally bound—often with a *Convolvulus* sp. vine (figs. 27, 31) [12]. Waterlily flowers and buds are then included as decorative species, though illustrations are unclear as to whether their stems were integrated into the core or affixed only at the top with a perpendicular binding. These bouquets are typically long, thin, and rigid, though their tops are sometimes shown to droop under the flowers' weight. Several examples from the tomb of Tutankhamun (nos. 1658, 1659, and 1660, see below) may belong to this category. They consist of a central core made of reeds (*Phragmites australis*), *Cyperus* spp. stems, or date palm midribs, serving as a handle to which branches of *Mimusops laurifolia* and olive were affixed. A second group includes shorter versions of the above, also composed of reed and/or papyrus culms forming a handle, to which leafy branches of a second species are attached (figs. 118-119; 141-145) [12]. Although frequently illustrated, these bouquets are seldom recovered archaeologically. Some examples (possibly dating to the Late Period rather than the New Kingdom) have been found at Dra Abu el-Nagga (forthcoming publication). Even simpler short bouquets are also attested. These lack a central core and consist only of branches tied together at one end, thus forming a handle, or at the center, resulting in a bundle-like appearance. This type of bouquet is the most common found in the archaeological experience. Specimens composed of loosely tied *Mimusops laurifolia* twigs were discovered in Tutankhamun's tomb (see below, nos. 507, 508, 509, and possibly 1348). Bouquets of similarly tied persea twigs were found at the foot of Meryet-Amun's coffin (p. 52, pl. XLVI) [33]. Further examples come from TT11 [28], dated to the Eighteenth Dynasty but reused in the Twentieth-Twenty-first Dynasties, consisting of one or two plant species tied with date palm strips or cereal culms. Bouquets from Kha's tomb are unusual, appearing to be formed of three small bunches, each composed of three or four papyruses (?) culms or strips, bound together with persea twigs and sweet clover culms, and further tied at the base

(fig. 12) [27]. Numerous other examples of this type have been published by Hamdy (43-45, 49-50, 52, 54-60) [29]. A related but more complex form is represented by long or short mounted (or formal) bouquets, described by Hamdy [31]. These include a stiff core—typically of reed or papyrus—tightly bound at the base, likely with palm or grass strips. Around this core, decorative elements were added in a tiered fashion, resembling architectural floors, and arranged circularly around the center. These were inserted deeply into the core and further tied perpendicular to it with vegetal strips. Decorative elements typically consisted of flowers (e.g., waterlily, poppy, cornflower), buds, or a flower–fruit combination (e.g., mandrake, persea). In iconography, such bouquets are characterized by especially elaborate and often drooping tops (see [12]: 35, 38, 41, 47-49, 52, 76, 92, 95, 105, 135). Archaeologically, their identification may be hindered by preservation issues. Examples include bouquets with *Phragmites australis* cores to which *persea* branches and grapevine leaves are alternately attached (32-34) [29]. Another example—possibly a short, mounted bouquet—consists of an unidentified plant core encircled with marshmallow petals beneath a layer of *Acacia seyal* flowers (53) [29]. Lastly, one should mention bouquets shaped as the *ankh* symbol, illustrated in New Kingdom iconography (147 n.3; 161 n.2) [31]. To our current knowledge, such forms have not been recovered archaeologically. However, it is noteworthy that Coptic bouquets were designed in the shape of the Christian cross, mirroring the *ankh* form [34]. The evolution of floral bouquets in the Roman period is evidenced by the case studies of [35] and Douch [36]. The former provided a detailed account of bouquets discovered with middle-class female mummies from the Antinöe Necropolis at Sheikh Ebada (2nd–4th centuries AD). These bouquets not only adorned the deceased but also conveyed ethnic and religious identity: ***)** A Byzantine Christian woman (3rd century AD) had numerous young date palm (*Phoenix dactylifera*) leaflets on her chest, along with flowering *Sesbania sesban* branches—possibly remnants of her funerary bouquet. ***)** A Leukyone woman of Asiatic origin (3rd century AD) had a compact bouquet composed of *Citrus medica* leaves, with a central structure of grapevine branches. ***)** A woman named Thaïs (4th century AD) had botanical remains and date palm leaflet strips placed on her chest. Bonnet identified nine plant species from the site and observed that *Citrus medica* had by then been integrated into middle-class funerary practice, suggesting an evolving floral symbolism [35]. Similarly, Barakat & Baum, analyzed numerous bouquets from the Roman necropolis at Douch (1st-4th centuries AD). They noted the incorporation of new Mediterranean species such as myrtle (*Myrtus communis*), marjoram (*Origanum majorana*), and rosemary (*Salvia rosmarinus*), reflecting changing botanical preferences [36]. Botanical studies of preserved bouquets of the New Kingdom and later times have contributed significantly to our understanding of their historical components and how these may have reflected changes in plant culture and ongoing political and economic relationships of Egypt with the surrounding different traditions. Indeed, already Schweinfurth, who analyzed floral remains collected by Maspero and Schiaparelli from multiple archaeological sites, including Gebelein and Dra Abu El-Nagga, highlighted the inclusion of native and foreign plant species such as the Indian *Sphaeranthus suaveolens* [37]. From a social perspective, instead, Schweinfurth observed that the size and richness of offering bouquets were often proportional to the donor's gratitude and the magnitude of the favour sought from the gods. Thus, floral offerings were deeply personal expressions of devotion, tailored to individual religious experiences [38]. clearly emphasized the significance of studying the forms of ancient Egyptian bouquets. He conducted an extensive comparative study of ancient and modern Egyptian floral traditions. His research revealed remarkable continuity in manufacturing techniques between ancient bouquets and those still in use in Sinai and the Near East, as well as smaller, Tunisian-style bouquets employed in festive contexts, Fig. X [31,34]. In ancient Egypt, funerary plants represent mourning and reverence for the dead and the promise of rebirth and eternal life, reflecting the civilization's deep spiritual connection to the natural world and the afterlife. This overview of bouquet components and structural variations reveals the Egyptians' aesthetic sensibilities and the deep ritual, mythological, and social meanings embedded within their floral traditions. This paper aims to document Tutankhamun's individual bouquets and scattered floral fragments housed in museum collections. This included obtaining precise measurements and high-resolution photographs to record key morphological characteristics. The documentation serves multiple purposes: to analyze aspects of their manufacture, to confirm the botanical identification of the species present, and, in many cases, to identify and record additional species that have not been previously documented or published.

4. Methodology

This investigation focuses on the botanical analysis of floral bouquets discovered in Tutankhamun's tomb, dated to the 18th dynasty. The bouquets were initially housed in the Egyptian Museum, Cairo, and were recently transferred to the Grand Egyptian Museum (GEM), Giza. The specimens examined are part of the official collection and are catalogued in ascending numerical order according to their exhi-

bition numbers at the Egyptian Museum in Tahrir. The museum's documentation process used basic but effective instrumentation. Photographic records were obtained using a Canon PowerShot A95 camera equipped with a 7.8-23.4 mm lens. For macromorphological characteristics, including shape, texture, and organ structure, standard measuring rulers and strings were used to observe finer details not visible to the naked eye (detached leafy branches, stems, leaves, flowers or floral parts, and fruits). A 20x magnifying glass and a binocular microscope (Nikon 31379) were utilized to examine minute features and surface characteristics. For anatomical characteristics, epidermal strips were taken from ancient samples of palm, grass, and sedge leaflets, and these were compared to recent specimens to facilitate accurate identification. For accurate identification, the observed features were systematically compared with authenticated herbarium specimens housed in B (Berlin-Dahlem), CAl (Cairo University Herbarium), and CAlM (Herbarium of the Agricultural Museum, Cairo), the abbreviations listed according to the *Index Herbariorum* 8th edition, 1990. Where possible, comparisons were also made with fresh plant specimens. During the identification process, a wide range of floristic keys and reference publications were consulted, including relevant archaeobotanical reports from Egypt and other regions. These resources were used alongside illustrations and photographic plates to ensure consistency and accuracy. Each plant specimen was assigned a valid Latin name, and the currently accepted synonyms were listed following the most up-to-date taxonomic literature covering wild and cultivated flora of Egypt. In cases where photographic documentation did not adequately reveal the structure of certain plant parts, diagrammatic illustrations were prepared to represent the bouquet and garland compositions visually. This integrated approach, which combined microscopic analysis, comparative botany, and visual documentation, ensured a comprehensive and accurate identification of the botanical components used in Tutankhamun's funerary bouquets. In this study, we will refer to the exhibition numbers assigned by the Egyptian Museum, as cited by the authors in their analysis of Tutankhamun's bouquets. Carter numbers will be provided in parentheses, e.g., 507 (Carter no. 051).

5. Results

All the floral bouquets examined in this study originate from the tomb of Tutankhamun in the Valley of the kings, uncovered during Carter's excavations in 1922, fig. (4). Based on the archaeological context and distinct stylistic characteristics, these specimens are securely dated to the Eighteenth dynasty. The seven bouquets are exceptionally well preserved, exhibiting no signs of mold, decay, or other biological deterioration. They were housed under a protective display showcase, allowing clear visibility and long-term conservation. All identifycations are consistent with those cited by Germer [39].

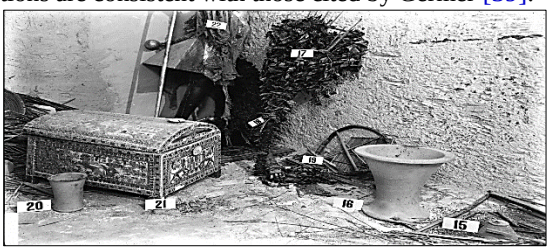

Figure (4) Tutankhamun tomb (*Reproduced with permission of the Griffith Institute, Univ. of Oxford*) (*After: http://www.griffith.ox.ac.uk/tutankhamundiscovery.html*)

Table (1) presents a detailed overview of the archival and museum reference information for each of the seven recovered floral bouquets. Each item is listed with its current exhibition numbers assigned by the Egyptian museum, grand Egyptian museum for display and curatorial tracking, original excavation number (Carter no.), photographic reference (Burton no.), official registration number in the Egyptian museum in Cairo (JE no.), and special register number (SR).

Table (1) catalogue of the seven floral bouquets discovered in the tomb of Tutankhamun

Exhibition no. (at the Egyptian Museum, Cairo)	GEM no.	Carter no.	Burton photographs no.	JE no.	SR	Description in Murray-Nuttall Handlist
507	14280	[051]	[0006, 0007, 0017, 0072, 1667, 1695]	62728	2775	Small bouquet
508	14282	[142a]	[0039, 0040]	62730	2777	Bouquet of leaves
509	15894	[019a]	[0006, 0007, 0016]	62727	2778	Small bouquet
1348	14281	[198]	[0584]	62729	2776	Bouquet of persea twigs
1658	15893	[205]	[0585]	62726	2774	Large funerary bouquet
1659	14279	[018]	[0006, 0007, 0016-0069]	62725	2773	Funerary bouquet
1660	14278	[017]	[0006, 0007, 0016, 0070]	62724	2772	Bundle of leaves on a wooden frame

4.1. *No. 507 [Carter no. 051]*

Small funerary bouquet measures approximately 39 cm. The leafy portion reaches a maximum width of about 14.5 cm, and the handle extends roughly 13.5 cm. It comprises seven leafy branches of the Persea (*Mi*musops laurifolia), which are carefully tied together just below the foliage. The binding is made from strips of an unidentified material, possibly a wisp of grass or a thin strip of date palm. A single seed of *Citrullus lanatus* was observed resting on the leaves of the Persea branches. While the plant species correspond with those identified by Germer [39], the authors note some uncertainty regarding the exact nature of the binding material, fig. (5).

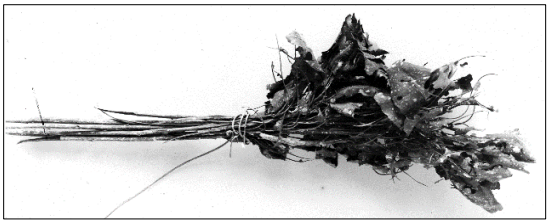

Figure (5) small bouquet no. 507 [Carter no. 51] (*Reproduced with permission of the Griffith Institute, Univ. of Oxford*)

▪ *Carter's card & transcription*

1) Position: North end of chamber, between statues.

2) Dimensions: Max. L. 40. W. across the widest point 12. Stalks to the beginning of leaves 21.

3) Description: Consists of 7 main stalks, with a few more added higher up. Just below leaves tied round with a sliver of bark? Only leaves left, no trace of flowers. To be identified later.

4) Remarks: Sprayed with a strong solution of cellulose acetate in acetone, fig. (6).

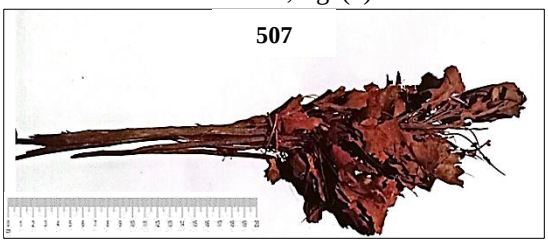

Figure (6) small bouquet no. 507

4.2. *No. 508 [Carter no. 142a]*

Small funerary bouquet measures approx. 39 cm. The maximum width of the leafy portion is about 13.5 cm, and the handle extends to roughly 26 cm. It comprises seven leafy Persea branches (*Mimusops laurifolia*), arranged together without any visible binding strips, fig. (7).

▪ *Carter's card & transcription*

1) Position: Under lion-head couch, below stools 140

2) Dimensions: L. 4.2, max. W. 18. L. of stalks 21.

3) Description: 6 stems, bare of leaves below, bunching to 18 cm. wide above.

4) Remarks: Sprayed with strong celluloid solution in amyl acetate.

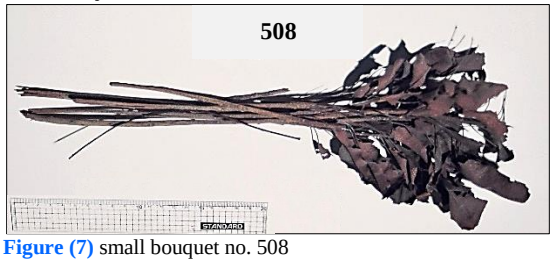

Figure (7) small bouquet no. 508

4.3. *No. 509 [Carter no. 019a]*

Small funerary bouquet measures approximately 37 cm in total length. The maximum width of the leafy section is about 13 cm, and the handle measures approx. 17 cm. It comprises around ten leafy branches of Persea (*Mimusops laurifolia*), arranged without any visible binding strips. The bouquet is in excellent condition, with no signs of deterioration, fig. (8).

▪ *Carter's card & transcription*

1) Position: Against the wall, to the right of the entrance, a small bouquet consisting of about a dozen branches.

2) Dimensions: The total L is about 43, leaves begin about 20 up. A few extra leaves were fastened onto these main branches.

4) Remarks: Same leaf as in large bouquets? kind. Sprayed with a solution of celluloid in acetone.

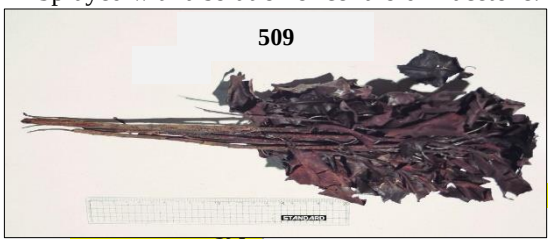

Figure (8) small bouquet no. 509

4.4. *No. 1348 [Carter no. 198]*

Small funerary bouquet measures approximately 40 cm in total length, with the maximum width of the leafy section being about 20 cm and the handle measuring 17 cm. It consists of around ten leafy branches of Persea (*Mimusops laurifolia*), arranged without any visible binding strips, fig. (9).

▪ *Carter's card & transcription*

1) Position: On the floor between the end of the shrine (207) & west wall of the sepulchral chamber (near 205)

2) Dimensions: L. 0.4. Breadth 0.16.

3) Description: A bunch of ten twigs of Persea (*Mimusops schimperi*) with a fragment of a leaf of a reed.

4) Remarks: One twig appears to have been cut off the branch by a knife; the other twigs were broken off. Photographed 1/3 rd.

Figure (9) small bouquet no. 1348

4.5. *No. 1658 [Carter no. 205]*

Large funerary bouquet measures 167 cm in total length, with a maximum W. of 73 cm across the leafy portion. The handle extends up to 84 cm in length and has a diameter of approximately 7 cm. It is composed of several leafy branches of *Persea* (*Mimusops laurifolia*), accompanied by a few branches of Olive (*Olea europaea*). These are secured onto five culms of common reed (*Phragmites australis*) and bound together using strips of Date palm (*Phoenix dactylifera*) leaflets. The handle is wrapped in large *Persea* leaves, with additional Date palm leaflet strips binding the distal end, fig. (10).

▪ *Carter's card & transcription*

1) Position: S.W. corner of sepulchral chamber, leaning against the S. wall.

2) Dimensions: Total L 1.67. Breadth at top 0.53. Depth 0.19.

3) Description: Composed of twigs & branches of the Persea (*Mimusops schimperi*) & olive (*Olea europaea*) tied upon a support of stems of the reed (*Arundo donax*), papyrus, & pieces of the windribs of leaves of the date palm. The handle of the bouquet is covered with large leaves of the Mimusops closely bound round with strips of leaves of the date-palm. The twigs of the upper part of the bouquet have been kept in place by transverse pieces of midribs of date palm leaves.

4) Remarks: No flowers and only a single immature fruit of *Mimusops*. The twigs & branches have not been cut from the trees, but torn. Many leaves have been partly eaten by larvae. Fungoid? growth of two kinds upon stems & leaves. Photograph of the detail of the handle of the bouquet.

5) Boodle: Small part of *Mimusops schimperi*.

6) Hochst: A kind of [...]-tree. treatment. Sprayed with a solution of celluloid in amyl acetate

Figure (10) large bouquet no. 1658

4.6. No. 1659 [Carter no. 018]

Large funerary bouquet stands erect, originally positioned against the wall to the right of a doorway. It measures 193 cm in total length, with a max. W of 56 cm across the leafy portion. The handle reaches a max. L of 74 cm and has a diameter of approx. 6 cm. Approx. 19 cm up from the base, the unbound ends of about ten branches are visible. Above this point, the handle is tightly wrapped with large *Persea* (*Mimusops laurifolia*) leaves, applied individually and formerly held in place by a binding of reed strips, now largely deteriorated. A triangular frame of reed stalks, 34 cm wide, is situated above the wrapped section, above which the branches appear to have been loosely arranged. At its widest point, the object measures approx. 60 cm. There is no evidence of flowers. The botanical composition includes several leafy branches of *Persea* and a few of Olive (*Olea europaea*), secured onto a support structure formed of three culms of common reed (*Phragmites australis*) and three woody leaf axes of Date palm (*Phoenix dactylifera*). The distal end of the handle is closely bound with Date palm leaflet strips. The entire object was treated with a solution of celluloid in acetone, fig. (11-a & b).

- *Carter's Card & transcription*

***)** Position: Standing erect, against the wall to the right of doorway. 19 up from bottom, unbound branch ends, about 10 of them.

The rest of the handle above this bound round tightly with leaves applied singly. They were held in place by a binding of reed strip, now almost entirely disappeared. Above a triangular frame of reed stalk. Above, apparently branches were loose. About 60 cm wide at widest point above. W of triangular frame 34 cm. Diam. of handle about 6. No trace of flowers. Leaves to be identified later. Sprayed with a solution of celluloid in acetone.

Figure (11) **a. & b.** large bouquet no. 1659 [Carter no. 18] (*Reproduced with permission of the Griffith Institute, Univ. of Oxford*)

4.7. No. 1660 [Carter no. 017]

Large funerary bouquet measures 161 cm in total L, with a max. W of 61 cm across the leafy portion. The handle reaches up to 62 cm in length and has a diameter of approx. 5.5 cm. It is com-posed of several leafy branches of *Persea* (*Mimusops laurifolia*) and a few branches of Olive (*Olea europaea*), tied onto supporting culms of common reed (*Phragmites australis*) and papyrus (*Cyperus papyrus*). The handle is sheathed in large *Persea* leaves, which are tightly bound with strips of Date palm (*Phoenix dactylifera*) leaflets. Notably, a single immature *Persea* fruit, measuring 2.5×2 cm, was observed on the object. The identification of materials includes Papyrus and Common reed culms, *Persea* leaf coverings, and Date palm bindings, fig. (12-a &).

- *Carter's Card & transcription:*

1) Position: Leaning against wall on right side of doorway. No evidence
as to original position.

2) Dimensions: See sketch.

3) Description: Bundle, consisting of branches of two kinds of leaves, fastened to a framework of reed (?) sticks, and arranged like a bouquet with handle at bottom. Handle bound round with strips of reed or bark. W. of frame 40 Max. W 57 and thickness about 25 Diam. at bottom 5

4) Treatment: Repeated spray with dilute celluloid solution (in amylacetate) followed by repeated strong celluloid solution (in amylacetate).

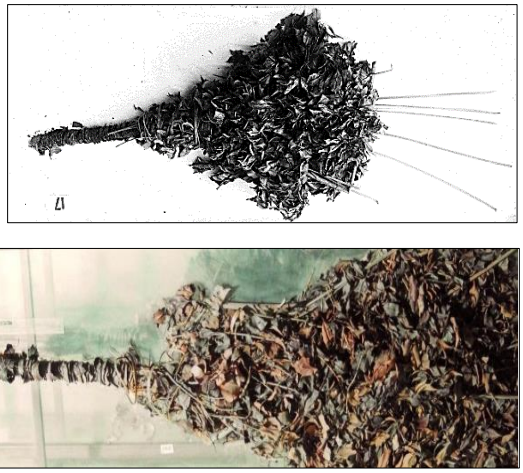

Figure (12) a. & b. large bouquet no. 1660 [Carter no. 17] (*Reproduced with permission of the Griffith Institute, Univ. of Oxford*)

6. Discussion

6.1. *The species*

Five plant species were identified as components of Tutankhamun's funerary bouquets: two species were used for decorative purposes, while three were employed as structural elements. The two decorative species were the persea [Mimusops laurifolia (Forssk.) Friis = *Mimusops schimperi* Hochst. ex A. Rich.] and the olive [*Olea europaea* L.]. Leafy branches of varying sizes were used from both species, depending on the specific bouquet. These two plants share several characteristics: they are evergreen and thus available year-round; they have glossy, leathery leaves; and they are not native to the Egyptian flora. The former is restricted to the mountainous regions surrounding the Red Sea and the Gulf of Aden. Its distribution includes Northeast Tropical Africa (specifically Djibouti, Ethiopia, Eritrea, and Somalia), the Arabian Peninsula, including Saudi Arabia and northern Yemen, within temperate Asia. Additional records exist from Sudan (Northeast Tropical Africa) and Uganda (East Tropical Africa). While its historical distribution may have extended into Upper Egypt, the lack of supporting data makes it more plausible that it was cultivated locally for ornamental or other utilitarian purposes [40]. The olive, in contrast, is native to the Mediterranean region and was likely introduced into Egypt as a cultivated species during the New Kingdom (170-172) [41]. This is supported by both the presence of a Semitic-derived name (*ḏt*, Wb V, 618, 4-6) [30] and depictions from the Amarna period [42], although earlier attestations are also known, probably as imported material [43]. Both species are well known for their use in funerary floral compositions, particularly bouquets from the New Kingdom. The persea is employed in all seven of Tutankhamun's bouquets, both in simple forms (without internal support) and in those supported by structural elements. Leafy branches of persea are frequently attested for such use during the New Kingdom. Persea appears in the funerary bouquets of Kha, fig. (12) [27], where it is found alongside papyrus culms and possibly sweet clover, and in the tomb of Queen Merytamun, where it is the sole decorative component [33]. In tomb TT11 at Dra Abu el-Naga, dated to the reign of Thutmose III (ca. 1480 BCE), persea appears in 34 of the 50 recorded bouquets and is the only decorative species used in each [28]. Furthermore, of the 24 bouquets published by Hamdy [29] from the New Kingdom and housed in the Cairo museums (excluding those of Tutankhamun and Queen Merytamun), 10 include persea leafy branches, four of which use it as the sole decorative plant. In some instances, persea branches are paired with vine leaves (32-34, 43) [29], once with *Salvadora persica* L. (54), and possibly once with both (50) [29]. These bouquets include both large, supported forms (3 examples) and simple, unsupported types (7 entries). According to the catalogue data published by Hamdy [29], persea bouquets have also been found in the tomb of a priest of Amun (43-44), the tomb of Maiherperi (45) [29], and the tomb of Sennedjem (52) [29], whose botanical remains have been recently re-published [44]. Notably, two fruits of *Mimusops laurifolia* (Forssk.) Friis were identified among the Tutankhamun bouquets, both from large compositions (nos. 1658 and 1660). The fruit is an ovoid, orange-yellow, sweet, and fleshy berry, measuring 1.5-4×1 cm. Unlike the evergreen leaves, the fruit is only seasonally available, typically in August, which provides a potential temporal marker for manufacturing the bouquets and thus the funeral itself. This inclusion also aligns well with New Kingdom iconography of bouquets, which occasionally depict fruit-bearing branches (e.g., pl. 19, third register) [3]. The extensive use of the persea in funerary contexts is not easily explained. As Baum [45] observed, textual evidence designating the persea as a sacred tree is relatively rare. If the word *šwb* (Wb IV, 435, 10-15) [30] is accepted as referring to the persea, New Kingdom texts link it only once with Hathor (pBologna 1094, 11.2) and once with Khonsu (Pushkin I, b, 127). Moreover, roots found at the entrance and courtyard of Hatshepsut's mortuary temple at Deir el-Bahari have been identified as belonging to the persea tree (148, n.8) [40]. According to Koemoth [46], the tree may have been considered akin to the sycamore [*Ficus sycomorus* L.] or desert date [*Balanites aegyptiaca* (L.) Delile],

i.e., one of the “trees of the horizon” that flank the rising sun in funerary texts, symbolizing rebirth [46]. This is supported by a stela from Taharqa (25th-26th dynasties) in the temple of Kawa, which mentions a statue of Amun-Ra between two such trees that [46] quotes. Interestingly, in the *Tale of the Two Brothers*, two persea trees emerge from the two drops of the blood of one of the brothers after he is transformed into a bull, and the trees are described as flanking the entrance of the pharaoh’s palace (BM EA 10183, recto, 17.1; [47]. The tree’s association with rebirth is also suggested in a passage of love poetry, in which a girl collects its branches at the opening of the river’s canal (Harris 500, 3.13-4.1); [48]. Its fruiting season coincides with the start of the Nile inundation and may thus symbolize its announcement [45]. Additional textual references describe the persea as medicinal: its inner bark or sap is mentioned as a treatment for skin burns [49]. Though infrequently cited for this use, one instance records the use of its cooked, ground branches in a magical context (p Cairo JE 52000, recto 4, 2). Finally, its fruit appears among the luxuries enjoyed by the Theban elite during New Kingdom banquets and feasts, presumably depicted as orange ovoid berries [40]. The second decorative species, the olive, is comparatively less attested in bouquets. Three examples of bouquets composed of olive leafy branches and a Rosaceae species have been found in TT11 [28]. Of the 46 entries listed by Hamdy [29], the only complete New Kingdom examples are from Tutankhamun’s tomb, where olive branches were exclusively used in large bouquets, always in combination with persea. Olive leafy branch remains, possibly originally from bouquets, have also been found at Dra Abu el-Naga (20th-26th dynasties) and Gebelein (Ptolemaic period), paired with persea in both cases (59, 64-65 [29]; 24 [26]). A bouquet composed solely of olive has been published by Hamdy [29] (66) and dated to the Roman period. Bouquets with olive branches dated to the same period are also known from Douch (p. 21, table 3; 23) [36]. (24 [26]) additionally mentions olive twigs, preserved in Berlin museums, ranging from the 11th dynasty (tomb of Any at Gebelein) to the 19th dynasty (tombs of Kent and others from Dra Abu el-Naga). A single olive leaf is reported by Germer [26] (23) from a bouquet in the tomb of Amenophis II. The use of olive in Egyptian funerary bouquets may only be fully understood considering Roman-era texts. While no ritual references are known from the Pharaonic period, Roman sources explicitly mention olive bouquets offered to the deceased on specific dates—e.g., the 22nd of Khoiak (pBM 10507, line IV, 22) or the 26th (P. Harkness, line II, 13-14). These offerings were likely associated with the Khoiak festival and the myth of Osiris's death and resurrection, suggesting the bouquet may have symbolized rebirth. The three structural plant species identified in Tutankhamun’s bouquets are the common reed (*Phragmites australis* (Cav.) Trin. ex Steud.), papyrus (*Cyperus papyrus* L.), and date palm (*Phoenix dactylifera* L.). All three were employed as structural support for the long bouquets, with the latter also serving as a binding material. Both *Phragmites australis* (Cav.) Trin. ex Steud. and *Cyperus papyrus* L. are *native* to Egypt and *commonly* found in riparian habitats. In the bouquets, they were used for their culms. The *former* has been attested in Egypt since the Predynastic period [41]. Characterized by its distinctive unilateral inflorescence, this species is likely the model for the monophonetic hieroglyph *-j* ( , M17). While [50] records its name as *jsw*, a depiction in the chamber of the seasons in the temple of Nyuserre (5th dynasty) (fig. 11) [51] labels it as *mȝ.t*. The plant is best known for its use in plaited objects [52]. However, its identification in ancient floral artefacts has often been hampered by insufficient botanical analysis, frequently resulting in confusion with *Arundo donax* L. The identification presented here therefore represents an important step forward from earlier research [39]. Consequently, publications explicitly recording *Phragmites* culms in bouquet manufacture remain rare and recent. To date, the only additional known examples are four bouquets, three intact large ones and one fragmentary specimen, belonging to the 18th dynasty and held in Cairo museums (32-34) [29]. The second support species, papyrus (*Cyperus papyrus* L.), is among the most iconic plants of ancient Egyptian culture. It is the prototype for numerous hieroglyphs and has been archaeologically attested from the Predynastic period through all subsequent phases of Egyptian history (p. 96-99) [41]. Given its cultural prominence, numerous names have been attributed to the plant and its various parts [50]. Its leaves were widely used in basketry [52,53], table 1; [54], table 1). While the presence of papyrus as an internal support element in bouquets is well attested in iconography, suggesting its continuous use since the Old Kingdom, it is rarely identified in archaeological reports. Apart from the bouquets of Kha, where papyrus was noted (though not clearly as support or decorative material), the bouquets of Tutankhamun represent the only well-documented example of papyrus being used in this way. In this case, papyrus was employed in the construction of a single large bouquet, item no. 1660. Finally, the woody axes of the date palm (*Phoenix dactylifera* L.) were used as a support structure in one bouquet only, no. 1659. To the best of current

knowledge, this is a unique example of such use in ancient Egyptian floral arrangements. More commonly, date palms were utilized for their leaflets, from which strips were made and used as binding materials. These strips are the only binding materials positively identified in Tutankhamun's bouquets, aside from item no. 507, which may also employ another species for binding. However, three bouquets (nos. 508, 509, and 1348) no longer preserve any traces of binding. Although *Phoenix dactylifera* L. is not strictly native to Egypt, it has been cultivated there since the Early Neolithic [55], and should be considered fully integrated into Egyptian flora. Alongside papyrus, it ranks among the most emblematic trees of ancient Egyptian plant culture, particularly due to its edible fruits. The pseudo-wood of the date palm had a wide range of practical applications [56], and its leaves were commonly employed in basketry [52,53]: table 1). Its widespread use as a binding material in ancient bouquets is probably underrepresented in the literature, due to a general lack of attention to binding materials in earlier publications. For example, in the assemblage of 50 bouquets from tomb TT11, 48 were bound with *Phoenix dactylifera* strips [28]. In Hamdy [29] publication on bouquets in the Cairo museums, 25 of 31 bouquets with preserved bindings were recorded using date palm strips. A final note should be made regarding a seed of *Citrullus* sp. found resting on a persea leaf in bouquet no. 507. This seed is likely a fortuitous inclusion and should not be considered an intentional component of the bouquet. However, it is worth noting that [57], in his recent doctoral dissertation, identified as many as 1586 seeds of *Citrullus lanatus* (Thunb.) Matsum. & Nakai among the plant remains recovered from Tutankhamun's tomb.

6.2. *The manufacturing*

The material for the manufacturing of the Tutankhamun bouquets must have been presumably harvested from cultivated spaces, such as gardens. This is certain for the persea and olive branches, since, as underlined, as not native species, but it is also likely for the palm date leaflets and the papyrus, attested in the iconography of gardens in the New Kingdom time fig. 109 and fig. 136 [58], and possibly for the common reed. In such a case, it can be expected that such gardens had an artificial body of water, such as a lake. Little is known, however, whether such cultivations were coming from the king's palace and gardens or instead the temples were charged to prepare such offerings. In the New Kingdom time, titles and professions linked to the temple were certainly known with the task of preparing the plant offerings (certainly including the bouquets) and of taking care of the gardens where these species were grown. During the 18th dynasty, Nakht held the title of "bearers of the divine offerings of Amun" and the title of "gardener of the divine offerings of Amun" [59]: 56, n.1; 58, n.2], while two of his sons had the title of gardeners only and one of bearer only [59]: 59, ll.5-7]. Nedjemger, the "Overseer of the garden in the Ramesseum in the estate of Amun", under the reign of Ramesses II, is shown in a scene of his tomb (TT 138) seated while receiving floral garlands and bouquets by the gardeners, probably one of the tasks that he must also have executed in life. Above the latter, P. Lansing 3,7 [60] also mentions among the jobs to be opposed to one of the high professions of the scribes a *jr.t ḥtp* (with herbs determinative, lit. "maker of the vegetal offers"), which can be a maker of the bouquet, then a distinct profession from the former. It is possible then the palace had its own gardens and gardeners in charge of the vegetal offerings and that these could have prepared them on the occasion of the death of Tutankhamun, or that the task of preparing such offerings was carried out by a temple institution and its professionals. The homogeneity of the bouquets' measurements (all around 40 cm in length for those without support, and around 160-190 cm for those with a support), however, speaks of a well-studied and not casual manufacturing carried out by one "workshop" or environment. Further, the analysis of the bouquets also permits some interesting notes about the harvesting methods. The persea branches of no. 1658, for instance, appears not as cut with a knife but torn from the tree, while at least one twig of no. 508 appears as cut with a knife (the others as broken off). No particular regard seems to be given between the two methods. The forms in which Tutankhamun's bouquets were composed have already been partly addressed in the introduction. As noted, the bouquets fall into at least two main categories. Four of them (nos. 507, 508, 509, and 1348) correspond to the "simple" type—that is, bouquets without internal support and of relatively small dimensions. *Comparanda* for such examples are numerous and were outlined above. The remaining three bouquets, by contrast, belong to the "with support" and "large" (or "long") category. It is not, however, straightforward to classify these as "formal" or "mounted" bouquets—defined here as floral arrangements fixed or structured onto a base or internal support, as opposed to loose hand-held bundles. In ancient Egyptian iconography, mounted bouquets are typically characterized by the arrangement of different species in tiered layers, perpendicular to the central support. That specific feature, however, appears to be absent or unclear in the present examples. In the case of Tutankhamun's bouquets, the two species (persea and olive) do not alternate in regular tiers. Although some evidence of composite bouquets is also known at the archaeological level (see introduction), it is also possible

that a distinction between "(long) mounted bouquets" and "large (or long) bouquets with support" may be too rigid and that the iconographies of mounted bouquets often wanted to represent "in layers" what in reality were instead only juxtaposed. It is therefore likely that the three large bouquets of Tutankhamun may have also been considered in ancient times as "*ms*", that is, mounted bouquets. In this regard, the presence of the persea fruits found in two of these bouquets, the funnel structure of bouquet no. 1659, and the frame structure of no. 1660, both unique to the authors' knowledge, both recalling the idea of mounted bouquets, may perhaps speak in favor. A more extensive study on the various types of bouquet manufacturing and on the definitions that the ancient Egyptians could have had of these, therefore, seems necessary. *Comparanda* for large bouquets with support are also reported in the introduction.

6.2. *The place of deposition and use*

The exceptional preservation of Tutankhamun's tomb, virtually undisturbed since its sealing, offers a rare and valuable opportunity to study the placement of botanical offerings, particularly floral bouquets, within a New Kingdom (royal) burial context. The original position of the seven recorded bouquets can be determined thanks to Howard Carter's detailed notes. It must be noted, however, that for the no. 1660, he also adds "No evidence as to original position", implying that its place of discovery marked on his card may not be the original one. According to the information he provides us, five bouquets (nos. 507, 508, 509, 1659, and 1660) were discovered in the antechamber, while two (nos. 1658 and 1348) were found in the burial chamber. Of those from the antechamber, bouquet nos. 509, 1659, and 1660 were positioned against the east wall, to the right of the entrance, and then towards the north side of the room. The last two were standing together, while the first one was lying on the left side, together with a reed circle, a lid of a rectangular rush basket, several pieces of papyrus matting, and a 40 cm long reed (Burton photo no. p0016). Bouquet no. 507 was instead located at the "north end of the chamber," not far from the other two, "between statues". These were the two life-size black and gold guardian statues placed at either corner of the north wall, which led to the burial chamber and faced each other. Between these statues, on the floor and against the north wall, various pottery and faience vessels had been arranged along with what appears in the archival photograph (Burton photo no. p0017) to be a large quantity of reed culms, on top of which the bouquet had been placed. Bouquet no. 508 was also located in the northern part of the antechamber, but towards the west side. Carter notes that it was placed beneath the folding chair numbered 140 (according to his inventory), which was itself stacked above a similar chair (Carter's no. 139). Both chairs were positioned behind a solid ebony child's chair (Carter's no. 39), all of which were situated beneath a lion-headed couch leaning against the west wall. In Burton's photographs (nos. p0039 and p0040), the bouquet appears indeed beneath chair no. 140, though not between it and chair no. 139. Instead, it seems to have been placed further back towards the wall, resting atop three stool legs (no. 142b) and three stool cross-bars (no. 149, according to Carter's numbering). The two bouquets in the burial chamber (nos. 1658 and 1348) were found near one another. Bouquet no. 1658 was positioned against the south wall of the burial chamber, which is adjacent to the north wall of the antechamber, in the northwest corner of the burial chamber itself. The smaller bouquet, no. 1348 was found on the floor nearby, though closer to the west wall of the burial chamber, thus, near the side of the shrine toward which the head of the Pharaoh was oriented. This placement is particularly noteworthy as it contrasts with, for example, the bouquets of persea found at the foot of Queen Merytamun's sarcophagus [33] but aligns with the symbolic notion of the deceased's journey westward. Finally, it is worth noting that all the bouquets were situated in relatively close proximity to one another. If one assumes that the burial chambers were filled in accordance with the sequence of the funerary procession, it is plausible that the bouquets were brought in during this procession and placed without significant spatial separation.

7. Conclusions

The re-examination of Tutankhamun's bouquets has made it possible to identify at least five plant species used in their construction, and to clarify the nature of the reed stems used as structural supports. Contrary to earlier research, these supports have now been definitively identified as Phragmites australis rather than Arundo donax. Botanical analysis of the structural components of the bouquets, including both supports and binding materials, is particularly significant, as such data remain scarce in the existing literature. Both decorative species used in the bouquets are symbolically linked to the concept of the deceased's rebirth and have well-documented funerary associations. Moreover, the bouquets represent one of the few intact and well-contextualized New Kingdom examples of leafy olive branches. Although similar shape type of bouquets are known from the New Kingdom, the case of Tutankhamun highlights the urgent need for a broader study of such artefacts, incorporating textual and iconographic evidence as well. Finally, the near-intact state of the tomb allows for a reliable reconstruction of the original placement of the bouquets within the burial space. These were not concentrated on a single cardinal point but were nonetheless located in a clearly defined area of the tomb: on opposite sides of the wall separating the burial chamber from the antechamber.

References

[1] Davies, N. (1933). *The tomb of Nefer-Hotep at Thebes*, 2 Vols., Pub. of the Metropolitan Museum of Art 9, NY.

[2] Davies, N. D. & Davies, N. M. (1923). *The tombs of two officials of Tuthmosis the fourth (nos. 75 & 90)*, The Theban tombs Series 3, Egypt Exploration Society, London.

[3] Davies, N. (1925). *The tomb of two sculptors at Thebes*, Memorial Series 4, The Metropolitan Museum of Art Egyptian Expedition, NY.

[4] Davies, N. (1941). *The tomb of the vizier Ramose*. Preliminary work by the late T. E. Peet and illustrated with the help of H. Burton, Nina, M. Davies, W. B. Emery, & G. S. Mileham. Mond Excavations at Thebes 1. Egypt Exploration Society, London.

[5] Sethe, K. (1961). *Urkunden der 18. dynastie*, Erster Band, 2nd revised ed. Urkunden des Ägyptischen Altertums IV (1-4). Akademie-Verlag; Akademische Druck- und Verlagsanstalt, Berlin.

[6] Davies, N. (1933). *The tombs of Menkheperrasonb, Amenmosĕ, and another (nos. 86, 112, 42, 226)*. Theban Tombs Series 5, Egypt Exploration Society, London.

[7] Brovarski, E. (1977). An allegory of death (Brief communications). *The J. of Egyptian Archaeology*. 73: 178-178.

[8] Jéquier, G. (1946). *Considérations sur les Religions Égyptiennes*, La Baconnière, Neuchâtel.

[9] Täckholm, V. & Drar, M. (1950). Flora of Egypt Vol. 2 Angiospermae, part Monocotyledons: Cyperaceae-Juncaceae. *Bull. Fac. Sci. Fouad Univ.* 28: 1-547.

[10] Mostafa, D. (1993). L'usage culturel du bouquet et sa signification symbolique, hommages à Jean Lechant, *Bibliothèque d'Études* 106 (4). IFAO, Le Caire.

[11] Barakat, H. (1992). La flore. In: Dunand, F., Heim, JL., Henein, N., et al (eds.) *La Nécropole de Douch (Oasis de Kharga)*, DFIFAO, Cairo 26: 259-260.

[12] Dittmar, J. (1986). *Blumen und Blumensträße als Opfergabe im alten Ägypten*, Münchner Ägyptologische Studien 43, Hrsg. H.W.Müller & W. Barta, Deutscher Kunst, Verlag München, Berlin.

[13] Porter, B. & Moss, R. (1994). *Topographical bibliography of ancient Egyptian Hieroglyphic texts, statues, reliefs and paintings Vol. II: Theban temples*. Oxford Univ. Press; Oxford.

[14] Derchain, Ph. (1953). La visite de vespasien au Sérapéum d'Alexandrie. *Chronique* d'Égypte. 55: 261-279.

[15] Legrain, G. (1914). *Statues et statuettes de rois et de particuliers III*. Catalogue général des antiquités égyptiennes du Musée du Caire. IFAO, Le Caire.

[16] Wreszinski, W. (1925-1935). *Atlas zur altägyptischen Kulturgeschichte*, Zweiter Teil. Hinrichs, Leipzig.

[17] Epigraphic Survey (1940). *Medinet Habu, Vol. 4. Festival Scenes of Ramses III*. Oriental Institute Pub. 51. Univ. of Chicago Press, Chicago.

[18] Schott, S. (1953). *Das schöne fest vom wüstentale: Festbräuche einer totenstadt*. Verl. der Akademie der Wissensch. und der Literatur Steiner in Komm, Mainz, Wiesbaden

[19] Grandet, P. (2005). *Le Papyrus Harris I (BM 9999)*, 2 Vols. Bibliothèque d'études 109. IFAO, Le Caire.

[20] Jambon, E. (2017). La présentation du bouquet monté (ms ms): Première approche d'un rite d'époque gréco-romaine, E. (2017). La présentation du bouquet monté (ms ms): Première approche d'un rite d'époque gréco-romaine. In: Baumann, S. & Kockelmann, H. (eds.) *Der ägyptische tempel als ritueller Raum: Theologie und Kult in ihrer architektonischen und ideellen Dimension*, Harrassowitz, Wiesbaden, pp. 351-388.

[21] Kitchen, K. (1975). *Ramesside inscriptions, historical and biographical*. I. B. H. Blackwell, Oxford.

[22] Van der Walle, B. (1952). Le pieu sacré d'Amon. *Archiv orientální*. 20 (1-2): 111- 135.

[23] Sauneron, S.(1962). *Les fétes religieuses 'Esna aux demiers siecles du Paganisme*. IFAO-Cairo.

[24] Kantor, H. (1999). *Plant ornament in the ancient Near East*, Oriental Institute, Univ. of Chicago, USA.

[25] Murray, M. (1910). *The tomb of two brothers*. Publ. of the Manchester Museum: Museum handbooks 68. Sherratt & Hughes; Dulau, London.

[26] Germer, R. (1988). *Katalog der altägyptischen Pflanzenreste der Berliner Museen*. Ägyptologische Abhandlungen 47. Otto Harrassowitz Verlag, Germnay.

[27] Schiaparelli, E. (1927). *Relazione sui lavori della missione archeologica Italiana in Egitto (anni 1903-1920), volume secondo: La tomba intatta dell'architetto Cha nella necropoli di Tebe*. R. Ministero della Pubblica Istruzione, Direzione Generale delle Antichità e Belle Arti. Giovanni Chiantore, Torino.

[28] Fahmy, A., Galán, J. & Hamdy, R. (2010). A deposit of floral and vegetative bouquets at Dra Abu el-Naga (TT 11). *BIFAO*. 110: 73- 89.

[29] Hamdy, R. (2015). *Documentary study of floral bouquets and garlands in ancient Egypt*, Lambert Academic Pub., Saarbrücken.

[30] Erman, A. & Grapow, H. (1955). *Wörterbuch der ägyptischen sprache im auftrage der Deutschen akademien*, Unveränderter Neudruck, Akademie-Verlag, Berlin.

[31] Keimer, L. (1925). Egyptian formal bouquets (bouquets montés). *The Am. J. of Semitic Languages & Literatures*. 4 (3): 145-161.

[32] Keimer, L. (1924). *Die gartenpflanzen im alten ägypten: Ägyptologische studien*. Mit einem Geleitwort von Georg Schweinfurth. Hoffmann und Campe, Hamburg; Berlin.

[33] Winlock, H. (1932). *The tomb of Queen Meryet-Amūn at Thebes*. Pub. of the Metropolitan Museum of Art Egyptian Expedition 6. Metropolitan Museum of Art, NY.

[34] Keimer, L. (1936). Bouquets Égyptiens anciens et modernes, *The Horticultural Review*. 23 (95): 6-8.

[35] Bonnet, E. (1902). Plante antiques des necropoles d'Antinoé. *Annales du Musée Guimet*. 30 (1): 153-159.

[36] Barakat, H. & Baum, N. (1992). *Douch II. La végétation antique de Douch (oasis de Kharga): Une approche macrobotanique*. DIFAO 27; Douch 2. IFAO, Le Caire.

[37] Schweinfurth, G. (1886). Les dernières découvertes botaniques dans les anciens tombeaux de l'Égypte. *Bulletin de l'Institut Égyptien*. 6: 256-283.

[38] Wilkinson, J. (1878). *Manners and customs of the ancient Egyptians*, Vol. 2, J. Murray, USA.

[39] Germer, R. (1989). *Die pflanzenmaterialien aus dem grab des Tutanchamun*, Gerstenberg, Hildesheim.

[40] Germer, R. (1985). *Flora des pharaonischen Ägypten*. Sonderschrift, P. von Zabern, Mainz.

[41] Vartavan, C., Arakelyan, A. & Amorós, V. (2010). *Codex of ancient Egyptian plant remains*. 2nd revised & extended ed., London.

[42] Cooney, J. (1965). *Amarna reliefs from Hermopolis in American collections*, 1st ed. Brooklyn Museum, NY.

[43] Murray, M. (2000). Fruits, vegetables, pulses, and condiments. In: Nicholson, P. & Shaw, I. (eds.), *Ancient Egyptian Materials and Technology*, Cambridge Univ. Press, Cambridge, pp. 609-655

[44] Tolba, M., Hamdy, R., Atallah, M., et al. (2024). Plant Remains from the Tomb of Sennedjem (TT1) in Deir el-Medina. In: Kamrin, J., Khaled, M., & Leitz, C. (eds.), *The Kingdom of the Mummies: Essays in memory of Ramadan B. Hussein*, Ministry of Tourism and Antiquities, Cairo, pp. 485-506

[45] Baum, N. (1988). *Arbres et arbustes de l'Égypte ancienne: La liste de la tombe thébaine d'Ineni (no. 81)*, OLA, 31. Peeters, Leuven.

[46] Koemoth, P. (1992). *Osiris et les arbres: Contribution à l'étude des arbres sacrés de l'Égypte ancienne*, Aegyptiaca Leodiensia 3, Université de Liège, Belgium.

[47] Bresciani, E. (1999). *Letteratura e poesia dell'antico Egitto: introduzione, traduzioni originali e note*. I Millenni. Giulio Einaudi, Torino.

[48] Mathieu, B. (2008). *La poésie amoureuse de l'Égypte ancienne: Recherches sur un genre littéraire au nouvel Empire*. Bibliothèque d'étude 115. IFAO, Le Caire.

[49] Germer, R. (2008). *Handbuch der altägyptischen Heilpflanzen*, Philippika 21, Wiesbaden.

[50] Charpentier, G. (1981). *Recueil de matériaux épigraphiques relatifs à la botanique de l'Égypte antique*, Trismégiste, Paris.

[51] Edel, E. (1964). *Zu den Inschriften auf den Jahreszeitenreliefs der "Weltkammer" aus dem Sonnenheiligtum des Niuserre*, Göttingen, Vandenhoeck & Ruprecht, Germany

[52] Wendrich, W. (2000). Basketry. In: Nicholson, P. & Shaw, I. (eds.), *Ancient Egyptian Materials and Technology*, Cambridge Univ. Press, Cambridge, pp. 254-267

[53] El Hadidi, N. & Hamdy, R. (2011). Basketry accessories: Footwear, bags, and fans in ancient Egypt. *J. of Archaeological Science*. 38: 1050-1061.

[54] Borojevic, K. & Mountain, R. (2013). Microscopic identification and sourcing of ancient Egyptian plant fibers using longitudinal thin sectioning. *Archaeometry*. 55: 81-112.

[55] Roubet, C. & El-Hadidi, N. (1981). 20000 ans d'environnement préhistorique dans la vallée du Nil et le désert Égyptien. *BIFAO*. 81: 445-470

[56] Gale, R., Gasson, N. Hepper, A. & et al. (2000). Wood. In: Nicholson, P. & Shaw, I. (eds), *Ancient Egyptian Materials and Technology*, Cambridge Univ. Press, Cambridge, pp. 334-371

[57] Hamza, N. (2024). *Study and analysis of plant remains and organic residues from the tomb of Tutankhamun*. Tesi di dottorato, Università della Sapienza di Roma, Roma.

[58] Hugonot, J-C. (1989). *Le jardin dans l'Égypte ancienne*, P. Lang, Frankfurt am Main.

[59] Manniche, L. (1986). The tomb of Nakht the gardener, at Thebes (No. 161), as copied by Robert Hay. *J. of Egyptian Archaeology*. 72: 55-78.

[60] Gardiner, A. (1937). *Late-Egyptian miscellanies*, Bibliotheca Aegyptiaca 7, Fondation Égyptologique Reine Elisabeth, Bruxelles.