

Using Beautiful Flowering Bulbous (Geophytes) Plants in the Cemetery Gardens in the City of Tokat

Kübra Yazıcı*, Hasan Köse², Bahriye Gülgün³

¹*Gaziosmanpaşa University Faculty of Agriculture, Department of Horticulture, 60100, Taşlıçiftlik, Tokat, Turkey;* ²*Celal Bayar University Alaşehir Vocational School Alaşehir; Manisa;* ³*Ege University Faculty of Agriculture, Department of Horticulture, 35100 Bornova, Izmir, TURKEY,*

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Abstract: The importance of public green areas in urban environment, which is a sign of living standards and civilization, increase steadily. Because of the green areas they exhibit and their spiritual atmosphere, graveyards have importance. With increasing urbanization come the important duties of municipalities to arrange and maintain cemeteries. In recent years, organizations independent from municipalities have become interested in cemetery paysage. This situation has made cemetery paysage an important sector. The bulbous plants have a distinctive role in terms of cemetery paysage because of their nice odours, decorative flowers and the ease of maintenance. The field under study is the city of Tokat which is an old city in Turkey. This study has been carried out in various cemeteries in Tokat, namely, the Cemetery of Şeyhi-Şirvani, the Cemetery of Erenler, the Cemetery of Geyras, the Cemetery of Ali, and the Armenian Cemetery. Field observation have been carried out in terms of the leafing and flowering times of bulbous plants. At the end of the study, in designated regions in the before-mentioned cemeteries bulbous plants that naturally grow in these regions have been evaluated. In the urban cemeteries, these flowers are used the most: tulip, irises, hyacinth, daffodil and day lily (in decreasing order of use). Various suggestions have been put forward in order to develop the cemetery paysage in the city of Tokat.

Keywords: *Tokat, Cemetery Paysage, Geophytes*

Introduction

Green areas are a key step between human-nature interactions towards providing better living standards in urban areas (Topalfakioğlu, 2002). Cemeteries have an important place among public green areas. The rise or the invention of cemeteries, their organization and development took place according to the customs, habits, hygiene requirements, population increase and social requirements of societies. "Religion" has certainly played the most fundamental role in the development of cemeteries. In addition, various customs of different societies by fusing with religious ideas caused every society to have their own "cemetery culture." Therefore, in every society, there were born unique architectural concepts with their own distinct motives (Aktan, 1999). Cemeteries were born after humans began to live in societies, and out of the need to bury their own dead. Cemeteries have always been paid respect for the sake of the people buried there.

In places under the rule of the Ottoman Empire, cemeteries are located in urban areas even like regular public green areas. First of all, the cemeteries are located at places where the landscape is the greatest. Because of this reason, they served as places to visit, to have rest, to mediate. There is another function of cemeteries under the Ottoman rule because of their position in urban areas. Since they are located in urban areas, they served as places where children played their games, where people went to picnic, where laundries were dried, where cattle were grazed, in short, cemeteries functioned as green areas inside cities with which most of the daily activities are involved (Aktan, 1999). Hence, graves, which is the most important sign that people leave behind, are not solely a raised piece of earth or a piece of enclosed land (Cömertler, 2001). Cemeteries are areas that are protected by special protection laws that cannot be used for other purposes through zoning changes and they complement the green areas in today's urban areas where green areas could not be increased for one reason or another. In our past and in some other foreign cultures, cemeteries functioned not only as places for burial but for example as places to visit and have some rest (Aksoy & Özkardaş, 2010). In Turkey, beginning with the twenty-first century in particular in metropolises, cemeteries exhibited a

*Corresponding: E-Mail: k-yazici-karaman@hotmail.com; Tel: +90545 645 10 35; Fax: +90356 252 14 88

development in parallel with the Turkish architecture that follows state of art in the World, passing the regional level (Aksoy & Özkardaş, 2010). However in the recent years cemeteries are perceived only as a burial area in Turkey. The cemeteries once in the countryside have been engulfed by the developing cities and now located in urban areas. These areas in or near rural areas are the organic links that connects the green areas inside cities.

Tokat is a city located in the Central Black Sea region of Turkey, which has cultural and historical heritage. The city, which was founded in 4000 B.C. and ruled by 14 states, is located middles the large fertile lands. Tokat was the sixth largest city under the Selçuk rule. Many roads and bridges were built, many Kervansarays were building and trade was good though Tokat was under the pressure of Byzantine Empire and the Crusaders in the twelfth century, and Mongolians after the year 1243. Because of its strong historical foundations, the cemeteries in Tokat are crucial because of their history and green nature. Particularly these days, cemeteries are important because of their use as green areas in urban areas. Therefore, planning of cemeteries, their paysage, and the values they carry from past to future are important.

Cemetery Paysage and Planning

Before designing a new cemetery, these should be done:

- Determination of the use of existing cemeteries
- Analysis of the current situation and definition of the problem
- Determination of a probable number of people who will die in the future
- Determination of the size of the area
- Determination of alternative cemeteries
- Protection and maintenance studies
- Nature protection and maintenance studies
- Organization structure

Flora and fauna studies should be carried out along the planning of the chosen area and the determination of trees and bushed found in the area. Landscaping has become important in the recent years in cemetery paysage. Moreover, in many cities cemeteries that spent their life-span become available for urban construction. Some cemeteries are invaded by slums and that causes city paysage in a negative manner and for some plants to disappear. In that case, many plants that signify the city are lost. Bulbous plants are the most endangered ones. Bulbous plants are favoured because of their nice odour, ease of maintenance and beautiful flowers. Hence, this study has been carried out to determine which bulbous plants are used in cemeteries in Tokat. Moreover, in this study we put forward suggestions regarding which bulbous plants may be used in cemeteries in Tokat. By photographing the bulbous plants in cemeteries, favourite plants have been determined.

Materyals and Metod

Study material consists of old cemeteries found in Tokat. Through the course of the history, Tokat was known as Komana (Byzantine), Kah-Cun (Persian), Dar Un Nusret (Selchuk), Sobaru (Mongolian), Tokat (Ottoman, and Turkish Republic). Tokat is one of the cities located in the Black Sea Region of Turkey. To the North of Tokat lies Samsun; to the North East, Ordu, to the East and South, Sivas, to the South West, Yozgat, to the West, Amasya. Erenler Cemetery, Şeyh-i Şirvani Cemetery, Ali Cemetery, Dokuztaşlar Cemetery, Geyras Cemetery that are found in the city centre have been determined as the area of study because their location and their history. Plants were photographed during the observational land study. When determining the species of a plant, we made use of "Davis Flora of Turkey."

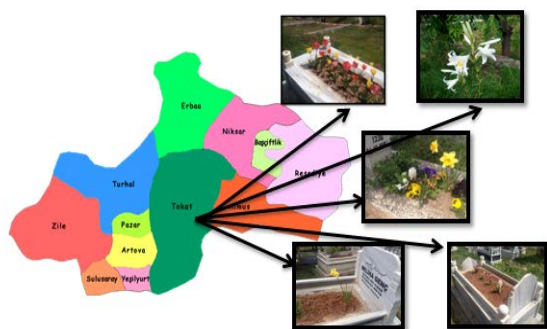


Figure 1 A map of Tokat



Figure 2. A view from the city of Tokat.

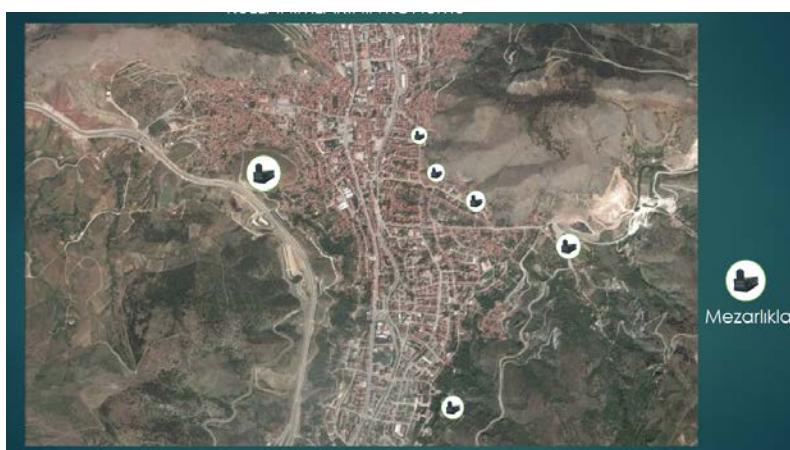


Figure 3. Satellite view of cemeteries in the city of Tokat.

Table 1. Coordinates of cemeteries found in Tokat.

Cemetery	Coordinates	
Şeyh-i Şirvani	40°18'29.52" N	36°34'04.40" E
Erenler	40°18'50.69" N	36°32'28.90" E
Ali	40°18'50.79" N	36°33'27.96" E
Armenian	40°19'04.07" N	36°33'30.95" E
Geyras	40°14'47.99" N	36°32'45.27" E
Dokuztaşlar	40°18'43.02" N	36°33'28.98" E

Findings

Şeyh-i Şirvani Cemetery

The Şeyh-i Şirvani Cemetery; Çay district at the city centre of Tokat, are located at Geyras. Şeyh-i Şirvani Cemetery is under the protection of Foundation of Protecting Cultural Heritage of Sivas. Şeyh-i Şirvani Cemetery was visited in late April-early May. Bulbous plants found in this cemetery are *Iris germanica*, *Hemerocallis* spp. *Tulipa gesneriana* cv. (Tulip), *Narcissus* spp. (Daffodil), *Narcissus pseudonarcissus*, *Hyacinthus orientalis*. The most used bulbous plant is *Tulipa gesneriana* cv. (Tulip).

Erenler Cemetery

Erenler Cemetery has the largest size in terms of area among other cemeteries in Tokat. It is located on the hillside in the Erenler district. Its size is 199,630 declares (Directorate of Cemeteries Municipality of Tokat). *Tulipa gesneriana* cv. (Tulip), (Yellow-Red-Pink-Purple) *Narcissus* spp (Daffodil), *Narcissus pseudonarcissus*, (has a flower on one handle has both white and yellow). *Hyacinthus orientalis*, *Iris germanica*, *Hemerocallis* spp are found as bulbous plants. In this cemetery as well, the most used bulbous plants is *Tulipa gesneriana* cv. (Tullip). Figure 2 shows Photographs of bulbous plants in the Erenler Cemetery.

Ali Cemetery

It is third largest cemetery found in Tokat with size of 10,648 declares (Directorate of Cemeteries Municipality of Tokat). It is located in the Mehmet Paşa district. *Tulipa gesneriana cv.* (Tulip),(Yellow-Red-Pink-Mottled pink) *Narcissus ssp.* (Daffodil) , *Narcissus pseudonarcissus* (has many flowers on one handle), *Hyacinthus orientalis*, *Iris germenica*, *Hemerocallis spp.* are found as bulbous plants in the Ali Cemetery. The most used bulbous plant is *Tulipa gesneriana cv.* (Tulip).

Armenian Cemetery

Although it is an old cemetery, no bulbous plants were found.

Geyras Cemetery

Geyras Cemetery, which is one of the oldest in Tokat, is located on the Sivas road in the Geyras district. In visits in late April and early June many bulbous plants were found. *Iris germenica* *Lilium candidum* (White lily)- (rare) *Iris germenica*, *Hemerocallis spp.* are at the beginning of the list. The most used bulbous plant is *Tulipa gesneriana cv.* (Tulip). Figure 4 shows Photographs from the Geyras Cemetery.

Dokuztaşlar Cemetery

It was founded at the foot of the Gıj Gıj Mountain at the east of the city. In the cemetery, which is still in use, a few Ottoman era tombstones were found. Just nearby the cemetery is located the Selcuk era Tomb of Sevdakar. On the walls of Mehmet Ağa Mosque, 8 or 9 typical tombstones from the Anatolian Selcuk era was placed. Because of the slope of the land in the cemetery is high and burials are still made, old graves gets under the earth. The cemetery is regarded as a level 2 archaeological site. *Tulipa gesneriana cv.* (Tulip),(Yellow-Red-Pink-Mottled Pink) *Narcissus ssp.* (Daffodil) , *Narcissus pseudonarcissus* (has many flowers on one handle) *Hyacinthus orientalis*, *Iris germenica*, *Hemerocallis spp.* are found as bulbous plants.

Tulipa gesneriana cv. (tulip) is found in all of the cemeteries located in Tokat. The tulips seen are cultivated tulips. Tulips have geogeous flowers in almost all of the colours. Therefore, they are very popular and favoured among other bulbous plants. Tulips have important place in Turkish history, culture and literature.

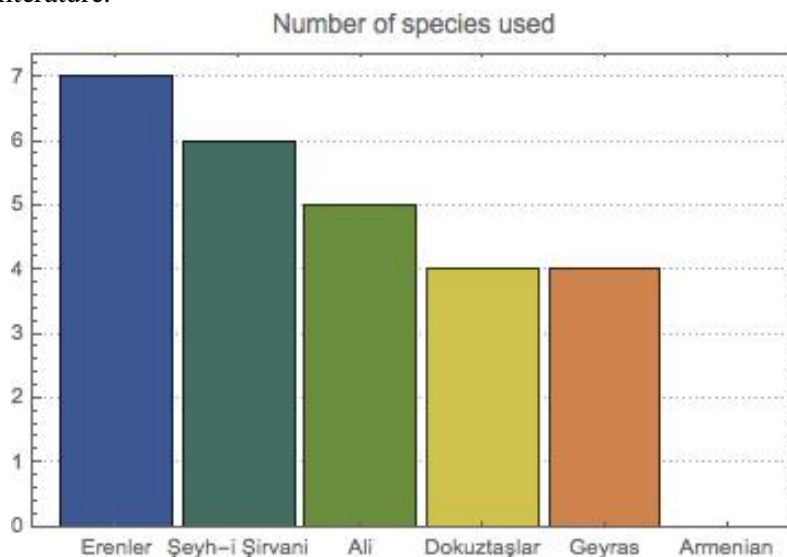


Figure 4. The number of bulbous plant species found in cemeteries (Cultivated plants)

Aegean and Mediterranean regions are natural environment for cultivation of *Lilium candidum* (White lily). In the city of Tokat, it is found as a cultivation plant. White lily is used in gardens and cemeteries though it is also used as a food (in the form of jam). Its flowers blossoming in June in the cemeteries of Geyras and Erenler has a nice view to see. *Narcissus* (daffodil) has six species found in Turkey (Arslan et. al.,2010). Daffodils found in Tokat are cultivation plants as well and are found in

many cemeteries. Apart from daffodil flowers, it is found as narcissus and jonquil in different forms. In the cemeteries in Tokat, *Narcissus sp.* Takes attention with two forms: 1) with one flower on one handle 2) with many flowers on one handle. *Narcissus spp.* is regarded as the symbol of narcissism. It is also used in pots and is among the important plants in cemetery paysage.

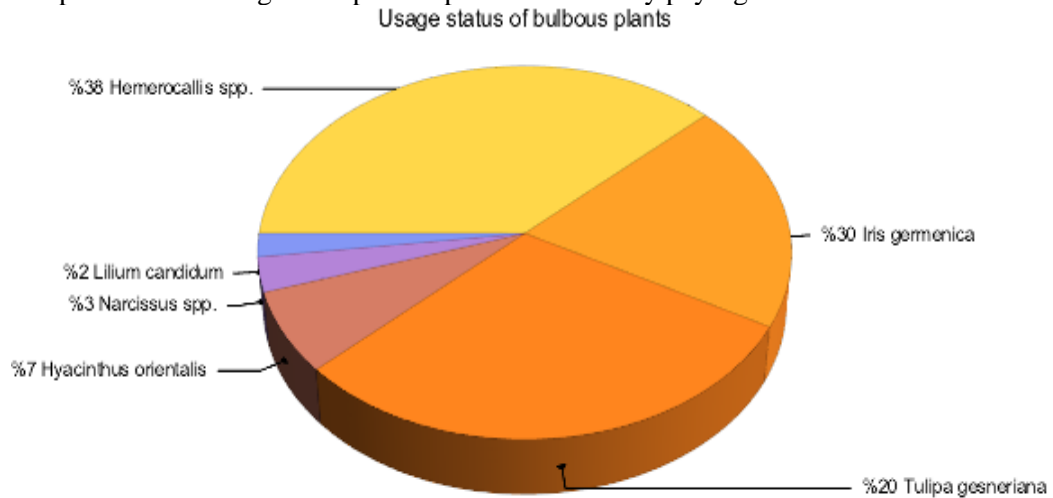


Figure 5. Total number of bulbous plants (Cultivated plants)

Hyacinth is a bulbous plant in the type of *Hyacinthus* in the family of *Hyacinthaceae* which was before categorized in the family of *Liliaceae*. The natural region hyacinths consist of the region from Persia to Turkmenistan. *Hyacinthus*, in the Greek mythology, is the young son of the Spartan king and symbolizes rejuvenation. Hyacinth, which is sold in every city in Turkey in pots, are found frequently in old cemeteries in Tokat. *Iris* begin to blossom in early May in Tokat. *Iris* means “rainbow” in ancient Greek. They have rhizome, rarely have tuber, and are shallow-rooted. They have flowers in blue, yellow and white colours. The form found in the cemeteries in Tokat is the one with blue flowers (blue magic).

Results and Suggestions

Cemeteries are reality that humans encounter at the end of their lives. The plants found in cemeteries are important beings symbolize resurrection besides showing that life goes on. Among the problems encountered in modern cemeteries comes disorganization cemeteries squeezed in a region by the developing urban areas. In this study, bulbous plants used in the cemetery paysage are investigated.

The planning and maintenance of cemeteries are among the most important duties of municipalities in particular in cities. Although the planning and maintenance of cemeteries are duties of municipalities, there is independent application done by the relatives of the deceased on the grave. In this regards, there have occurred the sector of cemetery horticulture in Europe (Arslan, 2010). In the study, six old cemeteries in Tokat are investigated and the found plants are explained with photographs. In the observational land study species from the families of *Liliaceae*, *Petrosaviaceae*, *Iridaceae*, *Amaryllidaceae* are found. Members of three families of plants found in cemeteries are cultivated plants and are restricted in number of species found. When put in order in terms of the green areas and cemetery paysage, the list is Erenler Cemetery, Şeyh-i Şirvani Cemetery, Ali Cemetery, Geyras Cemetery & Armenian Cemetery.

The demand of Tokat public to bulbous plants rather than seasonal flowers has been seen to be high. However, it was found that the number of species of plants used in family graveyards was insufficient. In order to complement this insufficiency, a number of plants naturally growing in the region should be used. In the Erbaa town of Tokat, in the cemetery of Çevresu (Ravak) village, the use of black crocus (*Sternbergia lutea L. Ker-Gwl. Ex Sprengel*) is high. However it still has the mystery that how and from where these plants arrived the Tomb of Ravak Father (Arslan, 2010). In urban cemeteries black crocus, freesia, *hemerocallis*, *canna* and *leucojum aestivum l.* could be used (Chart 1).

Chart 1. Various bulbous plants suggested for use in Tokat for cemetery paysage

Local Name	Latin Name	Family	Paysage Property	Ecological Needs
Africa zambağı	<i>Agapanthus spp.</i>	<i>Agapanthaceae</i>	Its narrow (in ruler form) leaves produce a badge. During most of the summer on top of the trunk without leaves there are found large (2.5-10 cm) blue and white flowers on top of its spikes.	Partly sunny places-rich blended permeable soil
Yıldız Çiçeği	<i>Dahlia spp.</i>	<i>Asteraceae</i>	Is a plant blooming in summer and autumn whose trunk is in the form of a bush and whose root is in the form of a tuber?	Likes more sunny environments.
Çiğdem çiçeği	<i>Crocus spp.</i>	<i>Iridaceae</i>	Is a long living tuberous herbaceous plant with blue flowers. Depending on its species, flowers can bloom in spring or autumn. Its flowers are closed during nights and cold weather.	Shade lovers. It is not selective in terms of soil.
Üzümlü sümbülü	<i>Muscari armeniacum (Mavi)</i>	<i>Asparagaceae</i>	Has white-blue colored flowers resembling buds. Arrangement of its flowers is like that of beads in grapes. <i>Muscari album</i> has white flowers.	It can stand down to -35 °C. Sun lover. It can grow upto 15-20 cm.
Süs soğanları	<i>Allium glatiator</i>	<i>Alliaceae</i>	Has lots of little flowers within the range of 5-25 cm. Flowers can be white, yellow, pink, red, lilac. There are also ones with blue and dark purple flowers.	Many water ornamental onions are grown in almost any soil well permeable.
Frezya	<i>Freesia</i>	<i>Iridaceae</i>	Resembles gladiolus in terms of bulb. They are used as cut flowers.	Light intensity is important as much as temperature. When the temperature is between 14-18 °C development is the fastest.
Tespil çiçeği	<i>Canna spp.</i>	<i>Cannaceae</i>	Known to Turkish gardens for a very long time. Its modern variants are obtained by hybridization of Middle and South American species. It can reach to a high of 75 - 150 cm. Its flowers (in the form of spikes, 30 cm) blossom in early summer.	In hot weather under the sun, they grow well with the use of enriched moist soil.
Avize Çiçeği	<i>Yucca filamentosa L.</i>	<i>Agavaceae</i>	Have showy flowers. Because of its form, sometimes, it is called as the “avize çiçeği” (chandelier flower). Has straight flowers reaching above in the form of cluster.	Needs more light.
Saraypatı	<i>Aster Novi-Belgii (Marie Ballard)</i>	<i>Agavaceae</i>	Flower tables are spike shaped. Has the form of cluster. Flower tables could be large or small. Have red,	Sunny or semi-shaded place of lover. Although known to grow in any kind of soil it does

Süpürge çiçeği	<i>Hosta spp.</i>	<i>Liliaceae</i>	pink, mauve, blue or white flowers. Its leaves form a spiral with straight or toothed edges. Long living tuberous plants that can reach up to height of 65 - 70 cm. Its leaves can grow up to 60 cm. Flowers blossoming among the showy leaves of the plants are nice as well. The best planting time is autumn or spring in between March and May.	not like heavy soils. Develops well in semi-shaded environments. Does not have a selective earth demand. Sandy soils and soils permeable to water are ideal. Should be watered during hot and dry times.
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Old and protected cemeteries are where many bulbous plants grow and protected to some extent. Because the cemeteries are protected areas, the public regards it as a bad habit to collect plants from cemeteries according to Islam and have not ruined the plants in cemeteries. This state of affairs caused plants to prolong their existence from past to future. As a result, the sector of bulbous plants has a responsibility as regards the protection and development of bulbous plants used in cemetery paysage. Meeting the demand of public for bulbous plants and the introduction of new species to Tokat will increase the use of bulbous plants. Free distribution of tulips, daffodils and hyacinths by the Tokat municipality will strengthen the bonds between the public and the municipality. This situation will reflect positively to the green areas of Tokat.

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