



## Main Problems Encountered in Green Field Facility and Solution Suggestions in Turkey

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### A R T I C L E I N F O

### A B S T R A C T

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In this article, essential questions and solutions in turf management practices encountered in Turkey were discussed. It is a fact that turf culture gained significance in the country during recent years. However, there are many handicaps in turf establishment and management activities in this sector. Since the proper techniques are not imposed during turf studies, turf areas are lost in a very short period of time deteriorated. Main problems are; lack of experienced staff, lack of infrastructure, effect of different ecologies, failures in genus and species preferences, over use of seed supplies, lack of high quality seed sources, lack of maintenance measures.

### 1. Introduction

The most important plant elements of the environment we live in are green areas. Natural beauties can reveal their true potential thanks to green spaces. As a result of rapid population growth, the longing for green grows even more due to the dense and distorted construction in the cities. In addition to giving people peace of mind thanks to the attractiveness of green colors, green areas also have many benefits such as preventing erosion by covering bare lands with vegetation, soil improvement, protecting nature, reducing the temperature by 5-12 °C by absorbing solar radiation, and doing sports activities and excursions on it (Beard, 1973; Uzun, 1992; Acikgoz, 1994; Salman et al., 2007; Yilmaz et al., 2012; Avcioglu, 2014).

Green area culture has started to gain importance in our country in recent years. Among the reasons for this; young generations' applications they see in

the world thanks to technology and communication and their demand for them, expressing their desire to do sports in higher quality areas, without going abroad in order to prevent the loss of time, especially for a high-income group; demanding the construction of football, tennis, golf and similar sports fields and also ensuring that this is transformed into a tourism sector. In addition, with some legal regulations made in recent years, it can be shown that it is compulsory to include green areas in the zoning areas. It should be accepted that green areas, whether optional or legal obligation, are one of the most important plant elements that should be included more in our environment in terms of human and environmental health.

In this article, the main problems encountered before, during and after the establishment of green areas in Turkey and some basic suggestions for their solution are presented.

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## 2. Major problems encountered and solution suggestions

### 2.1. Lack of qualified personnel

In our country, the number of scientifically trained and specialized staff on green areas is not enough yet. Today; Landscape Architecture Departments operating in the Faculty of Agriculture, the Faculty of Forestry and the Faculties of Architecture-Engineering work mainly on architecture, and the production of plant materials used in the landscape is usually left to the Field and Horticultural Departments of the Faculties of Agriculture. Turfgrass and green space culture is included in the discipline of agronomy in contemporary countries, and it is carried out in our country with the joint efforts of meadow-pasture and forage crops scientists.

Emphasis is placed on training intermediate staff in order to eliminate the shortage of technical staff, and even in some Vocational Schools with technical infrastructure and suitable ecological conditions (except İzmir Bayındır Vocational School and Antalya Serik Vocational School where this program is available; in places where the sector is dense such as Adana, Bursa, Yalova, Sakarya, Kocaeli) Opening programs under the name of "Turfgrass Establishment and Management Program" should be brought to the agenda and necessary infrastructure studies should be carried out and necessary initiatives should be made with relevant institutions and organizations (Salman et al., 2007; Yilmaz et al., 2012). In addition, the definitions of professional specialization, authorization and employment of graduates of this program should be determined by a regulation and recorded.

### 2.2. Infrastructure deficiencies

It will be used especially in seed production with special tools and equipment that will level the areas where the green field will be established, prepare the seed bed, perform the planting and maintenance operations; The inadequacy of sowing, hoeing, harvesting, threshing and packaging machines is one of the most important problems. Most of these machines are imported from abroad at high prices. Although there are some domestic productions such as lawn mowers, they remain limited. By making the necessary investments, the sector should be provided with

better quality seed production at a cheaper price (Salman et al., 2007; Yilmaz et al., 2012).

### 2.3. Disregard for different ecological conditions

Despite the fact that our country has very different ecologies, there is a misconception that grass seed mixtures prepared without considering whether they are suitable for cool and hot climate conditions can be applied to almost any region. Adaptation studies should be carried out and regional mixtures should be prepared in accordance with scientific rules in regions with similar characteristics in different regions of our country (Acikgoz, 1994; Salman et al., 2007; Yilmaz et al., 2012; Avcioglu, 2014).

### 2.4. Selection of species and varieties suitable for the intended use

Since the purpose of using the green area is not decided in advance, the established area is destroyed in a short time. Green areas should be established by taking into account the appropriate mixing ratios of the species and varieties suitable for the purpose. green areas; It is created in many different places and for different purposes, such as park-garden arrangement, recreation and picnic areas, under trees and building shadows, areas where sports such as football, bowling, golf and tennis are played, racehorse paddocks, roadsides and greening of slopes. For example, planting the mixture that should be used in the golf course in an area that will be used as a football field will cause the area to deteriorate in a short time (Salman et al., 2007; Yilmaz et al., 2012; Avcioglu, 2014).

### 2.5. Not paying attention to the time of sowing

Although green field grasses can be planted from the beginning of spring to late autumn, they are not suitable as the plantings will be at risk due to the extreme heat in the summer. Spring plantings; It should not be preferred unless there is a necessity, due to the increasing warming of the days and the emergence of the necessity of irrigation and the intense weed emergence. On the contrary, it should be preferred in terms of both economy and green space quality, especially in the autumn months when the weather is cool, irrigation is not needed or very little, and the annual weeds have completed their life. In the studies carried out in the ecological conditions of Tokat and Sakarya,

no significant problems were encountered in the plantings made in July in summer and in late November in autumn. However, it should not be overlooked that the ecological conditions in those years allowed these plantings (Acikgoz, 1994; Salman et al., 2007; Yilmaz et al., 2012; Avcioglu, 2014).

### 2.6. Lack of quality seed production

As mentioned in the infrastructure deficiencies, sector-specific mechanization cannot be achieved, the seed production areas cannot be selected well, the seed production in the selected areas is not carried out by well-trained personnel with sufficient knowledge for seed production and the seed production to be used in the green field facility is not sufficient in terms of technology and infrastructure. not have; It causes poor quality seed production and at the same time, the seeds produced are costly due to the high inputs. By making the necessary investments in this regard, we must eliminate our dependence on foreign sources by producing quality seeds that we need, and we must be able to export seeds by demonstrating our competitive power (Acikgoz, 1994; Salman et al., 2007; Yilmaz et al., 2012).

### 2.7. Lack of healthy data on seed

While producing a total of 2,761 tons (annual average 251 tons) of turfgrass seeds between 2006 and 2016 in our country, it spent \$100 million by importing a total of 46,867 tons (an annual average of 4,261 tons) turfgrass seeds in the same period (Yilmaz et al., 2012; Anonymous, 2021). However, there is no clear information about how much of this amount is used in the new green field facility, how much is used in the top seeding, how much is used in the renewal of the deteriorated area built a few years ago, and how much is exported as trading. For example, it is reported that 4,164 tons of imports, 316 tons of exports and 454 tons of domestic grass seed production were made in 2008 (Yilmaz et al., 2012; Anonymous, 2021), but it was not possible to find out whether the export was made from imports or domestic production. In addition, if 50 gr/m<sup>2</sup> seed is planted on average with 5,000 tons of seeds, 100,000 decares (10,000 hectares) of green area are established. In this case, 500,000 decares of green space facilities should have been built in the last five years, and the research and observations made are far below these

figures. For this reason, excessive seed waste and issues related to trade should be examined.

### 2.8. Waste of seeds

The amount of seed to be planted per unit area should be calculated and discarded in accordance with the prepared seed bed. For example, although Acikgoz (1994) and Avcioglu (2014) reported that about 20-40 kg of seeds per decare from a quaternary mixture is sufficient, it is not seen that less than 70 kg of seed is planted in many places today, and even more than 100 kg of seeds are witnessed. Indiscriminate and indiscriminate seeding also causes economic loss. Considering that the seeds are imported, it will be seen that this loss is much larger (Salman et al., 2007; Yilmaz et al., 2012; Avcioglu, 2014).

### 2.9. Introducing variety names to the market by changing them frequently

A large number of varieties belonging to a species are bred by many different companies, but seeds that are not very different from each other, but presented to the market by showing them as different, are encountered. At the same time, the names of the varieties are changed every few years on the grounds that they are newly bred, and users who do not know much about the subject are confused. Unfortunately, it is observed that the performance of a variety that is presented as new instead of a variety sometimes does not even reach the previous variety. However, it should be ensured that a variety that has proven its quality, known and sought after by users, remains in the market for a longer period of time (Acikgoz, 1994; Salman et al., 2007; Yilmaz et al., 2012).

### 2.10. Unnecessary degradation of green spaces

Green areas, suitable species and varieties are selected in appropriate proportions and if the necessary care conditions are followed, they continue their vitality and usability for many years. However, it is known that many public green areas are deteriorated and re-established even though they are usable every year or every few years. To the municipality officials who do this work; "Why is the same place broken down and rebuilt?" when asked; It is extremely sad to receive answers such as "giving jobs to party contractors" and "it is done for the citizens to see the municipality working". These practices, made for political and economic

reasons, are nothing but a waste of national wealth (Salman et al., 2007; Yilmaz et al., 2012; Avcioglu, 2014).

### 2.11. *Unprofessional cut grass cultivation*

One of the biggest problems is the depletion of fertile lands caused by unconscious cut grass growers who do not have a specific production facility and brand, do not care about natural resources and the environment. Especially in recent years, the need for green spaces has increased due to the spread of green space culture and some compelling rules for landscaping. Especially in the provinces of Sakarya, Düzce, Kocaeli and Bursa, fertile fields are rented for 2-5 years at very high prices and in cash, during this period, grass is planted and cut 2-10 times, 1-2 times a year, and approximately 2-4 cm. soil layer is carried from the field. At the end of the rental period, it is understood later that the fertile top soil layer of the field was taken away and no material was put in its place. The farmer who rents his field for a high price can see what his field has become when the lease period ends. Unfortunately, these practices still continue. This situation must be inspected by authorized public institutions and organizations and necessary measures must be taken. Such businesses that do not comply with the rules should not be given the necessary license to do this business (Acikgoz, 1994; Salman et al., 2007; Yilmaz et al., 2012; Avcioglu, 2014). In addition, it is one of the practices that can be considered to impose an obligation to employ "turfgrass technicians" to businesses that produce grass.

### 2.12. *Insufficient maintenance*

Indispensable maintenance operations for green areas; irrigation, fertilization, mowing, rolling, seasonal maintenance, top seeding and sandblasting, and combating weeds, diseases and pests. Irrigation; Yellowing, drying, color differences and failure to grow occur in the green area as a result of not being made on time, with appropriate methods, in necessary and sufficient quantities, from good quality water sources. Irrigation should be done by knowing the wilting point of the grass and it should be applied with an appropriate method in sufficient quantities when necessary. Fertilizing; Not knowing with which fertilizers, when and in what interval and how much to make, again causes the field to deteriorate. Scientific studies should be made and published in

media organs accessible to green field lovers, and different media should be used for this purpose. At least in the provincial directorates of the Ministry of Agriculture and Forestry, there should be "grass technicians" who are experts in the subject. In forms; cutting height, cutting shape, cutting time, technical features of the machine used and the sharpness of the blades should be considered. Format height varies with the intended use, for example deep shapes also require frequent formatting. Such areas are usually the parts of the golf courses where the holes are located. In terms of form, shape should not be made in the same direction all the time, it should be shaped from different directions each time. The mowing time should be in cool times, usually close to the evening, when the grass is dry and water loss will be less. The speed of lawnmowers is 5-7.5 km/h. Using machines faster than this will result in machine splashes and poorly mown areas. The sharpness of the knives is extremely important. Unsharpened blunt blades break the leaf tips instead of cutting them and cause the plant to lose excessive water and infect the plant with disease factors. Rolling; A light roller, which can be found behind the machine in any form, not only ensures that the area is as dense as necessary, but also provides different views by tilting the grass. Seasonal maintenance and rolling in early spring and at the end of autumn in order to prevent the roots of plants from airing and drying, especially in areas that are loosened due to frost heaving and long-term snow and rains in winter, positively affect the life of the green area. In addition, all maintenance operations must be reviewed within the seasonal maintenance. In addition, seasonal maintenance of frequently and excessively used areas should be done at least four times a year. Depending on the purpose of use, there are also areas that need to be maintained at the end of spring and beginning of summer. Especially football fields are areas that require intensive care and should be under constant care. The most important maintenance time of such sports fields starts at the end of the season, and it is made ready for frequent and extreme use by making intense efforts to be trained for the next season. Top seeding and sandblasting; In cases where the deteriorated parts of the green areas can be seeded from the top, decomposition and re-seeding should be avoided, and the area should be saved by top seeding under appropriate conditions. In addition, due to excessive chewing, pitting should be filled by

sandblasting and the area should be leveled. Weed control, if the weeds in the area can be removed, should be taken mechanically by hand and with sharp tools without damaging the grass. Spraying can be done in areas where there are too many weeds to be removed by hand. In this case, necessary measures should be taken to prevent harm to people and pets living in the area. Fight against diseases and pests; In general, these problems are not seen very often in areas that are regularly and properly maintained. However, if the weather is very hot, fungal diseases can be seen if excessive irrigation is done. By adjusting the irrigation frequency and amount, this problem can usually be overcome without spraying. As a pest, mice, rats, weasels and calfsuckles can cause more damage in the first periods, that is, when the green areas are not fully dense. In the following periods, this damage will be less. Mechanical methods are the first to be applied for these pests, and spraying can also be done when necessary (Acikgoz, 1994; Salman et al., 2007; Yilmaz et al., 2012; Avcioglu, 2014).

#### *2.13. Failure to make underground installation on time*

Leaving the electricity, water, wastewater and planting of tall plants after the green area facility and not making the applications that may cause the deterioration of the green area affect the quality of the area negatively (Salman et al., 2007; Yilmaz et al., 2012).

#### *2.14. Ignoring the drainage channels*

As a result of not paying attention to the drainage systems that prevent the accumulation of irrigation water and rain water in green areas in most places, the green areas deteriorate in a short time and at least the grass quality deteriorates. This problem is of greater importance, especially in flat sports fields without slopes. For this reason, the most suitable drainage method for the area must be determined and established before the seed sowing process (Acikgoz, 1994; Salman et al., 2007; Yilmaz et al., 2012)

#### *2.15. Lack of spare grass paddocks*

Some areas may need urgent renovation from time to time, especially due to the rapid deterioration in sports fields. In this case, planting is done in most places, which is not correct. It is

more economical and easier to have a spare grass area kept ready in a suitable place instead of planting. The deteriorated part is cut off and replaced with a suitable piece from the spare grass field, and the field is made ready for sports immediately (Salman et al., 2007; Yilmaz et al., 2012; Avcioglu, 2014).

### **3. Conclusion**

Scientists who conduct scientific studies on green areas in our universities, have master's and doctoral theses prepared and prepared, have many more questions to answer and many different problems to overcome. It is necessary for the subject employees to eliminate the deficiencies with a good organization and to constantly renew and develop themselves. For this reason, the most important expectations from researchers working in different ecologies are to cooperate closely in overcoming existing problems by conducting joint scientific studies and sharing information. In order to become a widespread non-governmental organization in this regard, it should focus on promotional activities by establishing an association or platform. The problem of foreign dependency should be put to an end by establishing the necessary communication with authorized institutions and organizations. The long-standing habit of bringing cut grass from abroad should be stopped. In recent years, the grass of many stadiums in our country, especially Istanbul Türk Telekom, Samsun 19 Mayıs, Şanlıurfa GAP Arena, Istanbul Olympic, Trabzon Şenol Güneş, has been brought from abroad. It is especially regrettable that people from abroad are urgently brought in for a few match maintenance (only watering, mowing and fertilizing). In our country, there are lawn experts at the doctoral level who can overcome this situation, but their knowledge is not consulted and evaluated for various reasons. In order to train well-equipped "Turfgrass Technicians" as well as expert staff with a doctorate, a "Grass Field Establishment and Management Program" should be opened in universities in regions with suitable infrastructure and ecological conditions, where the industry is the busiest and where there are application areas, employees should be supported and trusted, this dependent situation must be put to an end and further wastage of the country's resources must be prevented.

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