EVOLUTION OF THE QUALITY INDEXES OF THE TURF-GRASS FROM THE QUEEN MARIA PARK FROM TIMIŞOARA, ROMANIA – CASE STUDY

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Abstract: *The aim of this work is to analyse a case study regarding the evolution of a turfgrass surface from Timişoara (Timiş County, Romania, respectively the Queen Maria Park turfgrass. The data have been collected in 2011 year in five stages, respectively: 17 February, 18 March, 19 April, 19 May and 16 June. The observations have been realised visually using the NTEP Turfgrass Evaluation Guidelines. There have been considered the following NTEP indexes: density, texture, genetic colour, winter injury, pests and diseases resistance, drought stress and general aesthetic aspect. The ranking scale was from 0 to 9, where 0 represents the worst situation and 9 the best one. The conclusions of the research were the following: (i) the turf has bare soil spots remained after the winter, where at the beginning of spring are setting the weeds; (ii) the turf has many weeds, both monocotyledonous and dicotyledonous, their control being very difficult; (iii) presence of the weeds in turf is a consequence of the inadequate execution of the maintenance works. There is recommended to apply the maintenance work at the proper moment, mainly the over-seeding at the beginning of spring, fertilisation and mowing.*

Key words**:** *turf-grass, quality index, weeds, evolution.*

INTRODUCTION

The researches realised by BUNDERSON *et al.* (2009) have shown that the visual turfgrass quality ratings proved effective in measuring a diverse set of criteria in turfgrass plantings while the digitally based methods of evaluation were less useful by themselves.

According with BIERMAN *et al.* (2004), maintaining dark green leaves is a key aspect of turfgrass management. A rich green colour is aesthetically important, as well as an indicator of turf health and quality.

Variations in turf appearance or quality can occur frequently but can seldom be related to specific irrigation treatments (YOUNGNER *et al.*, 1981).

The most common way of assessing turfgrass quality is a visual rating system that is based on the turfgrass evaluator's judgement (MORRIS, 2008).

MATERIAL AND METHODS

The studied material is represented by the turf-grass from Queen Maria Park from Timişoara (Timiş County, Romania). The data have been collected in 2011 year in five stages, respectively: 17 February, 18 March, 19 April, 19 May and 16 June. The observations have been realised visually using the NTEP Turfgrass Evaluation Guidelines (after MORRIS *et* SHEARMAN, 2008).

There have been considered the following NTEP indexes: density, texture, genetic colour, winter injury, pests and diseases resistance, drought stress and general aesthetic aspect. The ranking scale was from 0 to 9, where 0 represents the worst situation and 9 the best one.

Density represents the coverage of the soil and it is evaluates after one year after seeding.

Texture reflects the leaf dimensions (length and width), this index determining mainly the ornamental value of the turf.

The foliage genetic colour was estimated in spring and differs from light green to dark green from a species to other and from a variety to other.

Winter injury is considered by the ability of the sward to remain green at the influence of the low temperatures, snow and ice, absence of light, long dormancy and the presence of some disease, mainly fungal.

Pests and diseases resistance depends by every variety and by their reaction to the attack of the pathogens.

Drought stress is assessing the ability of the sward to remain green or dormant after a drought period, the assessment being realised in the absence of the irrigation.

The general aesthetic aspect presents the synthetic appreciation of the turf evolution, this being the result of the analysis of the interaction of the external factors (MOISUC *et* SĂRĂȚEANU, 2008).

There have been also determined the weeds species present in the turf-grass sward.

RESULTS AND DISCUSSIONS

The turf density (figure 1) in the analysed sward is medium, this feature being ranked with 4 in the first observation, 5 in the second observation and 6 in the last three assessments, there being noticed an improvement from a season to other.

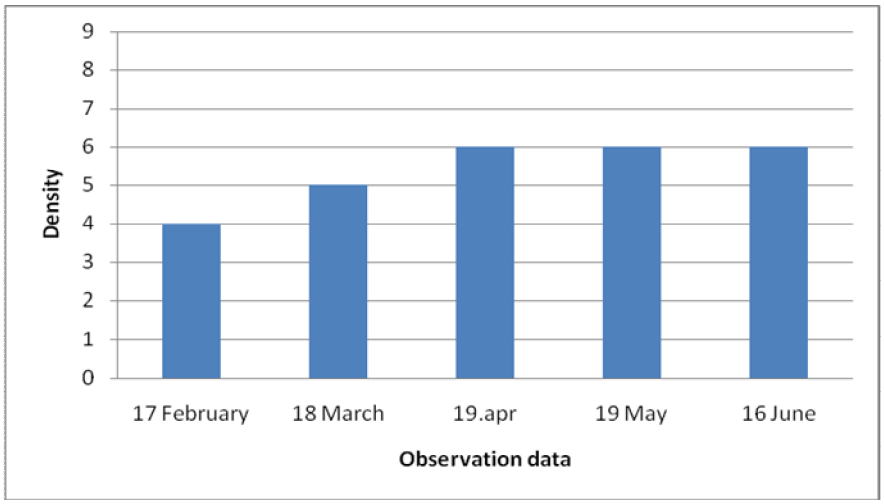

Figure 1: Turf density determined in five observation stages

Other aspect analysed in this turf is represented by the texture of the foliage (figure 2), this being influenced by the species that are composing the turf. In the case of the turf from Queen Maria Park the foliage is rough being ranked with 3 because there are dominant varieties of *Lolium perenne* and *Poa pratensis* with rough foliage.

In the case of the assessment index for the genetic colour of the foliage (figure 3) there has been noticed a nuance of dark green marked with 7 at the first two observations to very dark green marked with 8 in the last three observations.

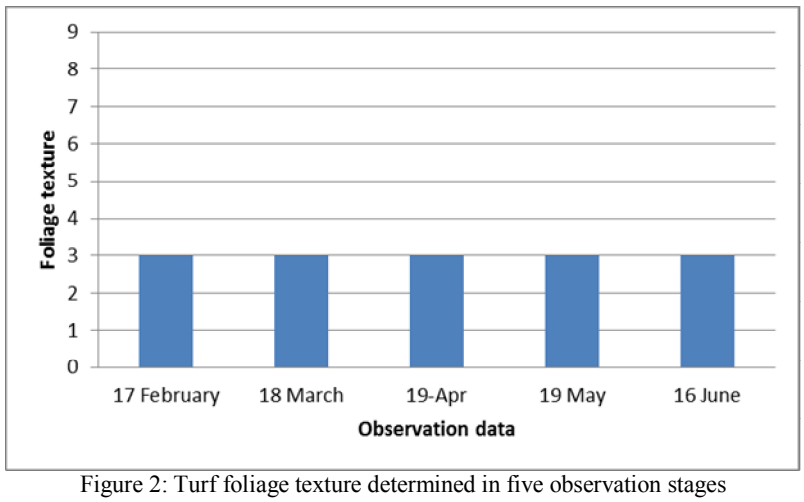

Figure 2: Turf foliage texture determined in five observation stages

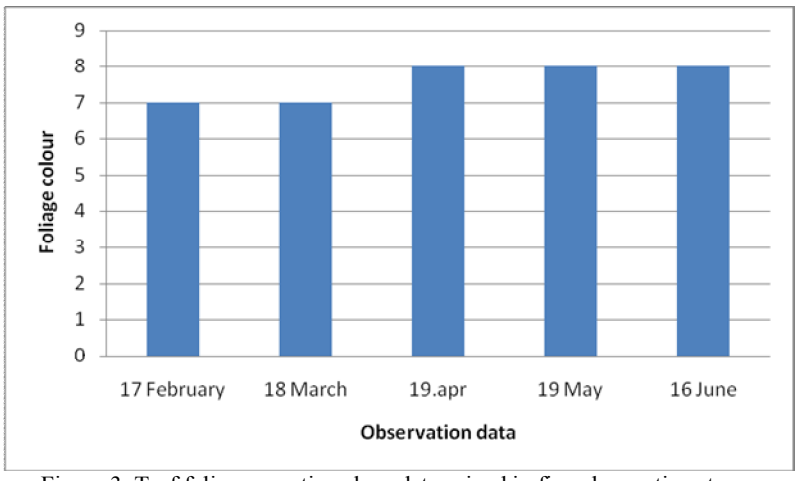

Figure 3: Turf foliage genetic colour determined in five observation stages

From the point of view of the winter injury, the turf from Queen Maria Park is acceptable, the mark given to it being 7, but there has to be mentioned that at the end of winter it has many bare soil spots.

Regarding the resistance to diseases and pests (figure 4) there was noticed a good evolution, the mark given being 8 in the first two observations and 9 in the last three.

Other quality index of the turf-grass is represented by the drought stress resistance (fig 5), the observations being done in the middle of June, and the mark given for this feature being 8 this being characteristic for a turf with good to very good resistance to the drought stress.

The last feature of the turf considered in this work is represented by the global aesthetic aspect that was illustrated in figure 5. From this point of view there has been appreciated that the global aesthetic aspect of the turf from Queen Maria Park is medium in February, the mark given being 5, but it has been improved in the following four observations when the given mark was 7.

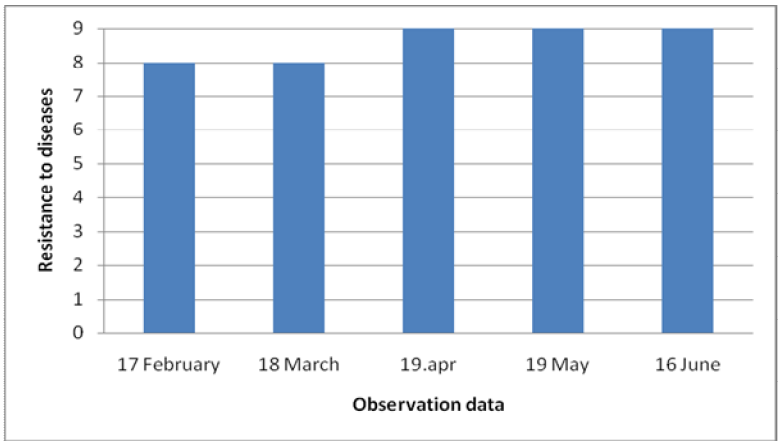

Figure 4: Turf resistance to diseases and pests determined in five observation stages

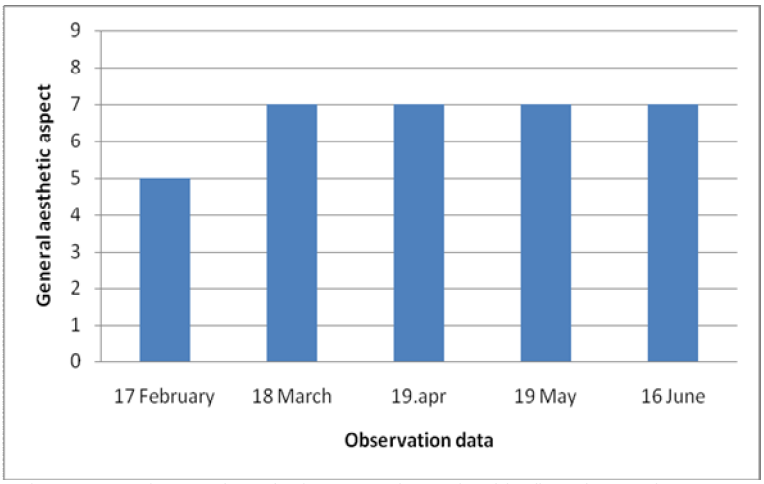

Figure 5: Turf general aesthetic aspect determined in five observation stages

From the point of view of the weeds, the analysed turf-grass is confronting with their appearance in the bare soil spots remained after the winter. Thus, there have been noticed the following species: *Cynodon dactylon, Poa annua, Agropyron repens, Trifolium repens, Plantago lanceolata, Glechoma hederacea, Prunella vulgaris etc.* there have been noticed some other species that are characteristic for the spontaneous flora as *Taraxacum officinallis, Orhithogallum umbellatum, Ajuga reptans, Oxalis acetosa, etc.*

CONCLUSIONS

After the analysis of the observations realised on different surfaces from the Queen Queen Maria Park from Timişoara (Timiş County, Romania) in our case study we have concluded the following:

- analysed turf has problems from the point of view of the bare soil spots remained after the winter, where at the beginning of spring are setting the weeds;

- the turf has many weeds, both monocotyledonous and dicotyledonous, their control being very difficult;
- presence of the weeds in turf is a consequence of the inadequate execution of the maintenance works.

There is recommended to apply the maintenance work at the proper moment, mainly the over-seeding at the beginning of spring, fertilisation, mowing *etc*. This fact can lead to the improvement of the quality of the turf and to the maintenance of the perenniality of the species that are composing the grasses mixture.

BIBLIOGRAFY

1. BIERMAN P., ROSEN C., HORGAN B. 2004. Evaluating the Effects of Foliar Iron Formulations on Turf Quality, Hole Notes, June 2004, 34-35.
2. BUNDERSON L.D., JOHNSON P.G., KOPP K.L., VAN DYKE A. 2009. Tools for Evaluating Native Grasses as Low Maintenance Turf. HortTechnology, 19 (3): 626-632.
3. MOISUC A., SĂRĂŢEANU VERONICA. 2008. Gazonul, Editura Agroprint, Timişoara, 240 p.
4. MORRIS K.N., SHEARMAN R.C. 2008. NTEP Turfgrass Evaluation Guidelines, www.ntep.org, accessed at 13.02.2011.
5. MORRIS K.N. 2008. A Guide to NTEP Turfgrass Ratings, http://www.ntep.org/reports/ratings.htm, accessed at 13.02.2011
6. YOUNGNER V. B., MARSH A. W., STROHMAN R. A., GIBEAULT V. A., SPAULDING S. 1981. Water Use and Turf Quality of Warm-season and Cool-season Turfgrasses, California Turfgrass Culture, 31 (3-4): 1-4.