

Profile Endowed Chair Turfgrass Ecology

Description of the discipline

The endowed chair Turfgrass Ecology will take responsibility for the field of ecology, (eco)physiology, agronomy and plant pathology of sports turf. The chair focuses on the analysis of processes at the level of the individual plant and the vegetation and their underlying interactions to support the sustainable management and use of sports turf of high quality and supports the development of expertise to achieve that. Specific objectives of the chair are to:

- * Develop theoretical knowledge regarding the ecology, (eco)physiology, agronomy and plant pathology of sports turf in order to analyse belowground and aboveground processes at plant and vegetation level, as well as their underlying interactions. Such theoretical knowledge is required to achieve sustainable management and use of sports lawns of high quality, high efficiency of resources used and minimum impact on the environment.
- * Develop PhD projects, and recruit and supervise PhD students working on scientific topics relevant to the practice of sustainable management of sports turf.
- * Teach in the field of ecology, (eco)physiology, agronomy and plant pathology of sports turf, within the framework of the Master programme Plant Sciences (MPS).
- * Explore possibilities to develop a BSc minor, in cooperation with the Department of Environmental Sciences.
- * Offer BSc and MSc thesis topics in turfgrass ecology.
- * Develop courses for professionals to transfer academic knowledge to end users.
- * Position WUR within the field of Turfgrass Sciences and create strategic alliances and collaborations with partners inside and outside the Netherlands.

Social significance

The sport of golf has evolved rapidly during the past 20 years. In the Netherlands the number of golf courses in the past 15 to 20 years nearly quadrupled. There are now more than 400,000 registered golfers and over 200 golf courses in the Netherlands with a total area of approximately 6,000 hectares sown lawn. Worldwide there are now more than 30,000 golf courses, most of which are located in the USA, Europe and Asia.

Also soccer is a large user of turf. At present, there are approximately 1.7 million registered players spread over more than 3,400 soccer clubs in the Netherlands with an estimated area of over 8,000 hectares of soccer fields. Estimates of the areas of soccer fields in the world range from several millions to tens of millions of hectares.

National and international social developments lead to increasing regulation in areas of soil and water quality and plant ecology resulting in sustainable use and management of our (semi-)natural environment. One example is the recently published Note Sustainable Crop Protection 2013-2023 "Healthy Growth, Sustainable Harvest", in which the intention is expressed to ban the use of pesticides within the sports- and leisure sectors from 2018 onwards. This will require large changes in management as the use of herbicides and fungicides in turf management is extensive. Golfers, soccer players and other athletes also have increasing demands related to the quality of the turf they are playing on and this requires further professionalization of the management and maintenance of sports lawns.

Scientific relevance

In the management of sports turf, production or growth of grass is not the central issue. Sustainable design, management and use of sports lawns are crucial and these should be based on the skillful integration of knowledge relating to processes that take place at the interface of soil, water and plant. Turfgrass is subject to very frequent mowing, intensive use and trampling. Plant height is sometimes less than 5 mm, for example on the greens of golf courses, with extreme demands on the management and maintenance, also with regard to its durability. High tiller densities are essential, damage caused by use must be 'repaired' by rapid regrowth, even under conditions of limited growth (e.g. low light intensities or relatively low temperatures). The challenge is therefore to promote tillering continuously at a constant removal of young, photosynthetically active leaf area, and to do so through highly focused management based on principles of precision supply of resources. Turfgrass ecology therefore focuses on fundamental understanding of ecology in heavily managed and exploited grass communities, while linking ecological sustainability of turfgrass under biotic and abiotic stress to specific management based on user demands.

Strategic importance of cooperation for WUR

The domain of turfgrass ecology is strategically important for WUR. WUR is traditionally strong in the agricultural sciences which include the disciplines of soil science, agronomy, crop physiology, water and nutrient management, and plant ecology. There is also much attention to the study of processes in natural ecosystems such as forests, heaths and dunes. Although there used to be scientific research on the ecophysiology and management of sports turf (e.g. by Drs. Minderhoud, Hoogerkamp and Schapendonk) in the period 1970-2000 within WUR, turfgrass ecology has received much less attention during the last decade against the development of a growing social interest in turfgrass ecology and a growing need for science-based management of turfgrass.

At this moment turfgrass science is not common in the university curricula of mainland Europe. Appointing a turfgrass ecology professor at WUR would create a unique situation with great potential and an international force of attraction.

Financing and embedding

The financial resources for an 0.2 position for an initial period of 5 year will be provided by the Dutch Turfgrass Research Foundation (DTRF).

The activities of the chair will mainly focus on the practice of sustainable management of sports turf in the Netherlands, Western Germany, Belgium, Luxemburg and Northern France.

The endowed chair will be part of the Centre for Crop Systems Analysis. The chair will closely collaborate with other research groups at WUR, in particular the Soil Physics and Land Management Group, and relevant institutes and organizations inside and outside the Netherlands.

Special Professor in Turfgrass Ecology

The new special professor in Turfgrass Ecology (0.2 fte) will develop high quality research and education in the field of ecology, (eco)physiology, agronomy and plant pathology of sports turf to support the sustainable management and use of sports turf.

Research

The candidate has the theoretical knowledge required to achieve sustainable management and use of sports lawns of high quality, high efficiency of resources used and minimum impact on the environment. S/he must have a vision on how to explore and actively invest in new potential scientific developments, related to the ecology, (eco) physiology, agronomy and plant pathology of sports turf in order to analyse belowground and aboveground processes at plant and vegetation level, as well as their underlying interactions. This is demonstrated by a strong track record, commensurate with her/his career stage and present activities.

S/he should be active (preferably leading) in relevant national and international networks. A record of success in securing research funding relevant to the practice of sustainable management of sports turf is highly desirable.

Education

The candidate is a competent teacher who inspires students and develops new undergraduate teaching activities at BSc and MSc level. Furthermore s/he is able to develop courses for professionals to transfer academic knowledge to end users.

Leadership and cooperation

The Chair is communicative and able to inspire and connect people based on a mutual interest in Turfgrass Ecology. S/he has excellent skills to work collaboratively in a multidisciplinary way, create synergies between different domains (plant, soil, water), connect science to practitioners, and act persuasively. S/he will position Wageningen University and Research Centre within the field of Turfgrass sciences and create strategic alliances and collaboration with partners inside and outside the Netherlands

