International Turfgrass

The Newsletter of the International Turfgrass Society

October 2010 Edition

Seminar of Chinese Turfgrass Society was held in Shanghai, China

by Liebao Han, Beijing Forestry University, Beijing, 100083, P.R. China
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A seminar hosted by the Chinese Turfgrass Society was held in Shanghai from August 19-22, 2010. The theme of the seminar was Turfgrasses and the Low Carbon City. More than 30 papers were submitted and presented at the seminar to approximately 150 participants. About 20 experts delivered presentations on subjects including turf, groundcover plants, perennial flowers, research on ornamental grasses, turf and groundcover landscaping, new turfgrass cultivars, perennial flowers, and new technology and methods for turf and the groundcover industry. A one-day tour of the Shanghai World Expo was organized to learn about their landscaping efforts including the use of turf and groundcover plants, which helped the attendees learn more about development trends and the importance of turfgrasses in the low carbon city.

Chinese Turfgrass Society was founded in 1983. The main purpose of the Society is to organize academic exchanges to stimulate intellectual discussion, carry forward scientific morality, popularize scientific ideas, and to organize international exchanges to promote scientific and technological cooperation worldwide. Since its establishment, the Chinese Turfgrass Society has made important contributions to the development of the Chinese turfgrass industry. Seminars have been organized on a regular basis, which have provided experts and professionals from various turfgrass related industries with great opportunities to exchange ideas and information. These exchanges have established platforms for the exhibitions of new technologies and products and accelerated the development of research and education on turfgrass in China.

Participants at the Chinese Turfgrass Society seminar in Shanghai, China, August 2010.

The International Turfgrass Society Board Members, Officers, and I wish to thank Dr. Danny Thorogood for his many years of dedicated services as the Editor of International Turfgrass Newsletter. As we all know, he did an excellent job keeping the members of the Society well informed about news and activities from around the globe. It is my intention to maintain a high quality newsletter consistent with those Danny consistently provided to the Society.

I hope you enjoy the very good articles in this edition. I encourage members of the Society to submit to me news worthy information they would like to share with the membership in the future.

Sincerely,
Nathan R. Walker

Remember:
The 12th International Turfgrass Research Conference will be held in Beijing, China in 2013.

hosted by Dr. Liebao Han
President, ITS

In this Edition

Playing surfaces for the Football World Cup in South Africa

by Dr. Stephen Baker, Head of Soils and Sports Surface Science, STRI, United Kingdom

INTRODUCTION

The World Cup took place in South Africa in June and July and culminating with Spain beating Holland in the tense final at Soccer City, Johannesburg. The STRI were appointed by FIFA as pitch consultants for the tournament, liaising closely with the Local Organising Committee and groundstaff and match officials at all the venues. A team of six STRI consultants and four assistants were present during the competition.

From a turf perspective, the World Cup raised several challenges and issues. Ten stadiums were used, half of which were newly constructed for the tournament. However, this was only part of the turf requirements as there were also the team base camps for thirty-two participating countries, additional venues near each stadium where teams could train before matches and a training centre for the referees. In total, approximately 80 pitches were required.

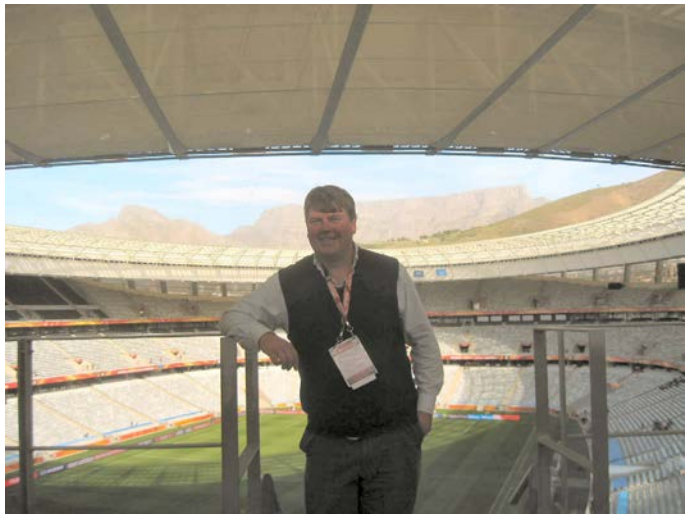
The first main challenge to turf provision was that of climate and altitude. South Africa is a large country with climate ranging from subtropical in the north-east close to the Mozambique border, to a more temperate climate around Cape Town, although with the risk for heavy winter rainfall, to potentially very cold weather on the highveldt. The World Cup tournament took place during the South African winter and in Pretoria and Johannesburg, where the elevation is up to 1500-1700 m, night-time temperatures fell to around - 5˚C during the tournament. This necessitated the use of frost covers at most of the elevated, inland sites.

There was also a cultural issue as many of the stadiums and training sites were used primarily for Rugby and higher standards, particularly in terms of cutting height, sward uniformity, surface evenness and preparation, are needed for international football played at the highest level.

GRASSES

Most of the existing pitches in South Africa were based on kikuyu grass (*Pennisetum clandestinum*) sometimes oversown with perennial ryegrass (*Lolium perenne*). There were a few bermudagrass (*Cynodon*) pitches and one with seashore paspalum (*Paspalum vaginatum*). The main issues with the kikuyu-based pitches were that there would have been a severe risk of dormancy in many areas and the coarse texture of the sward.

Some of the new stadium pitches had been established with *Lolium perenne*/*Poa pratensis* sward but with the tournament taking place in the winter and the requirements for football being best met by perennial ryegrass most of the pitches had to be converted to give a ryegrass dominated sward. Both physical and chemical methods were used including removed on the existing sward with a Koro Fieldtopmaker or a local Peruso machine, chemical suppression of the kikuyu using Primo-Maxx and selective herbicides and intensive verti-cutting on mixed kikuyu/perennial ryegrass swards to encourage the dominance of the perennial ryegrass.



Stephen Baker at the Cape Town stadium with Table Mountain in the background.

PITCH CONSTRUCTION

Most of the new stadium pitches had sand-dominated rootzones over a gravel drainage carpet but some such as Loftus Versfeld Stadium in Pretoria used converted Rugby pitches with an existing soil profile, although with additional drainage and heavy sand dressing. A particular challenge was the Mbombela Stadium in Nelspruit which had to be reconstructed with less than three months to go before the first game because the rootzone and turf were not up to

specification. This pitch was reinforced with Desso GrassMaster while other reinforcement products included mesh elements and StaLock polypropylene fibres.

Kikuyu grass in a mixed perennial ryegrass/kikuyu sward.

Most of the training pitches were based on the native soils but many were upgraded in terms of drainage, surface levels and sand-based surface layers. As well as being important for the tournament, this was a very significant legacy issue with the new pitches and the excellent new stadiums being available for future sports provision in South Africa.

PESTS AND DISEASES

Potential pest problems included mole crickets (*Gryllotalpa africana*), black maize beetles (*Heteronychus arator*) and black cutworms (*Agrotis ipsilon*). Pythium was a problem at some sites in the establishment phase before temperatures dropped and grey leaf spot, Dreschlera leaf spot and dollar spot were also present. However, timely control meant that pest and disease issues were generally dealt with very effectively.

PITCH MONITORING AND PREPARATION

Detailed monitoring work was carried out by the STRI staff as part of such preparation for matches, with regular measurements of soil water content, sward height, hardness and traction, supplemented where needed by assessments of ball rebound and ball roll properties. This information could be linked into the management advice to provide the best possible playing surfaces for the tournament.

Controlling kikuyu by verti-cutting in a mixed sward at Loftus Verseld Stadium, Pretoria.

Best management practises for velvet bentgrass (*Agrostis canina* L.) on golf course putting greens

Report from an international seminar held in, Finland 16-18 June 2010

by Trygve S. Aamlid

About 10% of the golf course putting greens in Finland have a plant cover consisting wholly or partly of velvet bentgrass (*Agrostis canina*). The qualities of this beautiful turfgrass species have recently been documented in several research projects in North America and Scandinavia. From 16 to 18 June 2010, experimental results and practical experiences were summarized in a seminar held by the Scandinavian Turfgrass and Environment Research Foundation (STERF) and the Finnish Golf Federation in Hyvinkää, Finland.

Participants gathered on a tee at Kytäjä Golf Club.

Velvet bentgrass (VB) is a native species in northern and central Europe. After being brought to North America during the emigration period, New England superintendents realized that velvet bentgrass produced beautiful greens like a 'velvet carpet'. Later, VB fell out of favour as fertilizers and pesticides were introduced and creeping bentgrass (CB, *Agrostis stolonifera*) became the predominant species for putting greens.

In the Nordic countries, the benefits of VB were rediscovered through the project 'Evaluation of turfgrass varieties for Scandinavian putting greens' (STERF, 2003-2006). In this project VB had better winter survival than any other species on putting greens where no pesticides were used. The results triggered a new STERF-project focusing on VB winter hardiness and management practises. This project has been administered by the Bioforsk Turfgrass Research Group and involved the training of Ph.D. student Tatsiana Espevig, originally from Belarus, but now permanent resident of Norway. While most of Espevig's field research was conducted at the Norwegian Turfgrass Research Centres Landvik and Apelsvoll, experiments on winter hardiness were carried out during her training period in the laboratories of Dr. Bingru Huang at Rutgers University and Dr. Michelle DaCosta at University of Massachusetts.

Besides the extensive research component, the STERF project has included a broad scale evaluation of velvet bentgrass on putting greens at several golf courses in Finland, Sweden, Denmark and Norway. As the project is now in its last year, STERF took the initiative to an international seminar at Hyvinkää, Finland, 16-18 June 2010. Speakers at the seminar were not only from Nordic countries, but also from four North-American universities: Dr Jim Murphy from Rutgers University, Benjamin Pease from University of Wisconsin, Dr. Michelle DaCosta from University of Massachusetts, and Dr. Katerina Jordan from University of Guelph, Canada. Keith

Delegates from Russia, Sweden, Denmark and Norway evaluated the thatch/mat layer at Kytäjä.

Duff from R&A also participated at the seminar, and shared information about R&A services for golf clubs. The total number of participants was 45, representing nine different countries.

Besides the many presentations and fruitful discussions, the participants at the seminar also visited Kytäjä Golf Club and Peuramaa Golf Club, two beautiful Finnish golf courses with VB putting greens. At Kytäjä, most of us even enjoyed an 18 hole round of golf starting 7 pm, i.e. during the long Nordic midsummer evening.

On behalf of the STERF board, I would like to thank all speakers and participants at the seminar. Special thanks are extended to Kristiina Laukkanen from the Finnish Golf Federation who took care of all practical arrangements.

Hopefully, we will see more VB on northern golf courses in the future!

In brief, major findings concerning VB as a species for putting greens can be summarized as follows:

- There is no big difference in VB and CB in tolerance to freezing temperatures or to the winter diseases pink snow mold (*Microdochium nivale*) and gray snow mold (*Typhula* sp.). However, VB is more tolerant to ice encasement than CB and especially *Poa annua*. This is probably the main reason why VB has shown better winter survival than CB in many Scandinavian trials.
- Differences among the current VB cultivars Avalon (SR 7200), Greenwich, Legendary, Villa, and Vesper and generally small, but Villa seems to have a leading edge both in American (NTEP) and Scandinavian (STERF) variety testing. Vesper is darker green and denser than the other cultivars and outperformed Avalon (SR 7200) in Wisconsin trials.
- Major objectives in Rutgers' breeding program with VBG are a more stoloniferous growth habit, resistance to root *Pythium*, copper spot and anthracnose, improved seed yield and improved salt tolerance. The seminar recommended that VB breeders should also be focusing on snow mold resistance and cultivars with slightly lower tiller density.
- VB has lower growth rate than any other turfgrass species, especially at decreasing day length in fall. Mowing every other day is often sufficient, especially if combined with lightweight rolling up to three times per week.
- VB putting surfaces often have higher green speed than comparable surfaces consisting of CB or other turfgrass species. However, due to its thatching tendency,VB putting greens are often soft, especially when compared with red fescue (*Festuca rubra*).
- The wear tolerance of VB is better than CB, but due to its less stoloniferous growth habit, the time needed to recover from winter damage, ball marks, and mechanical injury is often longer.
- Like other turfgrass species, VB requires high N inputs during grow-in, but it is important to reduce fertilizer levels as soon as turf cover is complete. The optimal N rate for well established VB is still unclear. Researchers and practitioners from Rutgers, Guelph, and Scandinavia pointed to 0.5-1.0 kg N/ 100m^2/yr (0.1 – 0.3 g N m^2/ week) as optimal. Research in Wisconsin suggested that VB responses to N are cultivar specific and that the species may need up to 2.0 kg N/100m^2/yr, except in severe shade.
- The use of a proper combination of N rate and topdressing level is very important for thatch control. In coastal areas with ample rainfall, VB should be dusted with find sand every week or at least every other weeks, totalling around 20 kg sand/m^2 per season. As the sand might be difficult to get into the turf, grain size should not exceed 0.7 mm. N rate should be held at a level just to get an acceptable (not very green) color.
- Weekly grooming, light verticutting and surface slicing are also needed to control thatch on VB greens, but heavy mechanical treatments should be avoided due to VB's slow recuperative capacity .
- VB has lower evapotranspiration (ET) values and higher water use efficiency than other cool-season turfgrass species. Once established, VB will benefit from wilt-based irrigation rather than light and frequent irrigation to field capacity.
- Danish and Canadian experiences show promising results with a seed mixture of 10% VB and 90% fine fescue for putting greens. As fine fescue and VB seem to have much of the same ecological adaptation, this combination warrants further investigation. It might perhaps be an alternative to fine fescue + colonial bentgrass (browntop, *Agrostis capillaris*), which is a common mixture on European putting greens.

Turf Research Activities in Germany

by Wolfgang Praemassing
DEULA Rheinland Bildungszentrum, Kempen, Germany

At ETS Conference in Angers, France in April 2010 several results of turf research activities in Germany were shown. Particularly the young turf research center, "Rasenfachstelle" at Hohenheim University could present results out of Bachelor, Master, and Ph.D. projects. The "Rasenfachstelle" (RFH) was initiated by former turfgrass scientist Dr. Heinz Schulz with financial promotion by the German Golf Federation (DGV), German Turf Grass Society (DRG), German Greenkeeping School (DEULA Rheinland), German Greenkeepers Association (GVD), and was founded in 2003.

In this newsletter I would like to introduce these German activities to all interested ITS-members and turf enthusiast and would like to point out some projects with excerpts out of the abstracts of the presented papers at ETS conference.

Turf Grass Research in Germany

Schneider, H., W. Henle, U. Thumm, and W. Claupein

Turf grasses impact a lot of people in many ways on a daily basis. Millions of square metres (approximately 5% of the total area of Germany) of turf grass in parks, home lawns, commercial landscapes, roadsides, athletic fields, golf courses, and sod farms improve our quality of life by providing open space, recreational and business opportunities, enhanced property values, and the conservation of important natural resources. The Rasen-Fachstelle RFH is part of the Agricultural University of Hohenheim close to Stuttgart and the one-of-a-kind turf grass research centre in Germany. RFH is interdisciplinary concentrated on doing research and education in all kinds of turf grasses from meadows to golf greens.

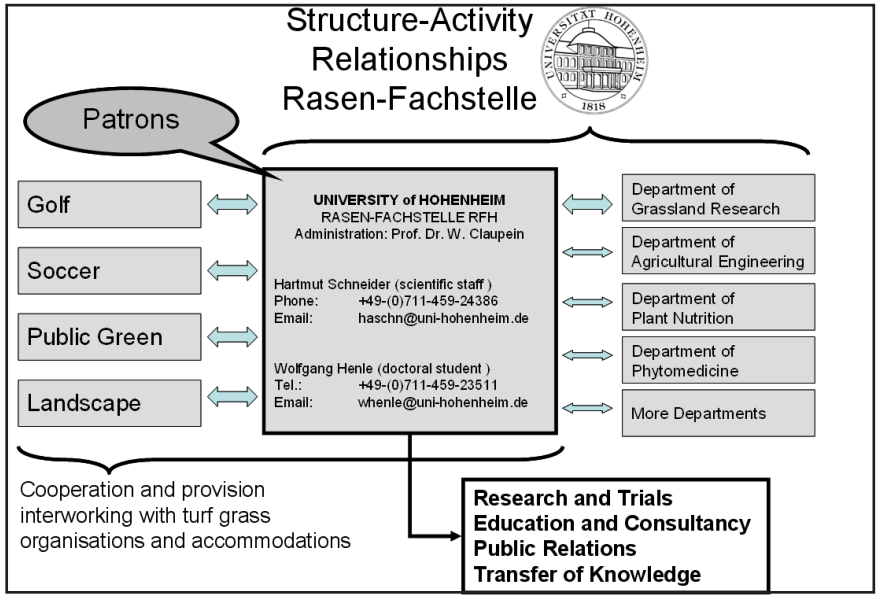
Throughout the years there are a lot of different commercial and non-commercial turf grass and soil trials in the approximately one hectare dimensioned testing field and in greenhouses. The non-commercial trials are supported by 4 patrons: German Golf Federation (DGV), German Turf Grass Society (DRG), German Greenkeeping School (DEULA Rheinland), and German Greenkeepers Association (GVD). They assure an independent experimental research.

Research, Field, and Laboratory Testing

Trial field for variety testing for the Federal Plant Varieties Office (Bundessortenamt)

Hohenheim is one of the trial stations for variety testing of new turf grass seeds of the Bundessortenamt (BSA).

University teaching, master module "Turfgrass Science", lectures and in practice



Beside the education of the agricultural students the RFH is also part of the German Greenkeepers Education and the further training of football groundkeepers.

In addition to research and education the RFH is instrumental in doing seed specifications (RSM), golf course building regulations and the environmental programme for golf courses in Germany.

Greenkeeper school at DEULA Rheinland and DEULA Bayern

List of current researches and trials:

- Localized dry spots (LDS) and use of wetting agents

continued in next column

List of current researches and trials: (*continued*)

- Use of carbonate sand for root zone mixtures *Agrostis canina* versus *Agrostis stolonifera* on golf course putting greens
- Use of Microclover for lawns
- Different effects of the growth regulators “Moddus“ and “Regalis“
- Effect of the growth regulator “Regalis“ on growing height, root growth and general aspect of turf grass
- Roof planting of low-intensity grassland on surface soil
- Changes of soil-water retention using soil amendments
- Effects on sward quality of different soil amendments in sandy root zone mixtures
- Use of superabsorbers to reduce draught stress on sports turf
- Influence of a superabsorber on the establishment of turf grass

A different kind of roof planting - Establishing 1.8 ha low-intensity grassland on surface soil as ecological compensation area on top of a multi-storey car park

Henle, W., H. Schulz, H. Schneider, U. Thumm, W. Claupein

The region of Stuttgart is marked by modern industry and in the border areas from city to more rural sites by intensive crop production with a high portion of vegetable crops, favoured by very good soils and climatic conditions (yearly precipitation: 650 mm; annual av. temp.: 9,5 °C). Due to the constantly growing Stuttgart International Airport and additionally by building the Stuttgart New Exhibition Centre close to the airport enormous areas were withdrawn within shortest time from agricultural use and ecological functions. A part of the ecological compensation area for the structural land use was planned as an ecologically meaningful roof planting of the type of a low-intensity dry land meadow with local species on top of the multi-storey car park which spans the motorway A8, altogether with a surface of 1.8 ha. (*continued on next page*)

The multi-story car park of the new exhibition cetre Stuttgard, designed as a land bridge connecting the airport/exhibition centre area in the south with the areas across highway A8.

In contrast to usual roof plantings following the German FLL regulations, the surface soil of the area should be used as material for the 15 cm deep root zone firstly to meet the "Soil Protection Law" and also to reduce costs for the root zone material. In a field trial two different seed mixtures, one mainly with grasses the other with a higher portion of herbs and legumes have been tested in 4 repetitions over three years. The trial was established on a special built miniature scale model of the car park roof to see how the two different seed mixtures behave especially on the flat top and the slope exposed to the south. Irrigation was only provided for establishment of the sward during the first year. Over three years ground covering to prevent erosion, changes of the botanical composition of the plant inventory as well as the flowering aspect have been observed.

The trial has shown that the mixture with higher portion of herbs and legumes clearly had a better aspect of flowering during the spring time as well as in autumn which lead to more insects like butterflies. It was also observed that during summer periods with high temperatures and lack of water ground coverage was higher when legumes and herbs are included in the seed mixture and therefore soil erosion was reduced. Changes of the botanical plant inventory could be observed in both mixtures. Therefore some of the species used for the field trial have been excluded in the final seed mixture.

Microclover – a revolution for lawns?

Wagner, M., W. Henle, H. Schneider, U. Thumm, W. Claupein

White clover (*Trifolium repens*) is mainly referred as an undesirable species in turf grass. Nevertheless, several advantages of white clover consider a possible use as seen by its use in highly intensive pastures. Colour, wear-, disease- and drought stress tolerance as well as the biological fixation of air nitrogen argue for a potential field use in lawns, too. The aim of the study was to identify aspect, colour, composition and ground coverage of the clover in a Microclover™-ryegrass mixture and provide a rating for practical experience. 2006-2009 field trials evaluated the role of four different N-fertilisations with and without wear on a Microclover™-ryegrass mixture.

Results show the effects of N-fertilisation and wear on the turf quality of the Microclover™-seed mixture. On all plots wear enhanced significantly the dominance of clover and therefore the quality of turf. Nitrogen fertilisation increased colour and therefore quality ratings in all observations.
The appearance of lawns with Microclover is equal to a nice maintained turf, although the structure is different. Microclover provides a resistant and cut-compatible turf with good coverage. Overall, a versatile use of Microclover on public lawns, private gardens and extensive sport areas might be accepted.

Some trials of the listed projects are still running and further results will be available in autumn 2010. For further information please contact:

Rasen-Fachstelle (Turf Grass Research Centre), Department of Crop Science, University of Hohenheim, Fruwirthstrasse 23, 70599 Stuttgart, Germany
www.uni-hohenheim.de/rasenfachstelle

Turf words in Chinese

氮	nitrogen = dan
绿色	green = lu se
蒲公英	dandelion = pu gong ying (*Taraxacum officinale*)
剪草机	mower = jian cao ji
一年生早熟禾	annual bluegrass = yi nian sheng zao shu he (*Poa annua*)
沙子	sand = sha zi

News from Austria and Slovakia

by Alexander Richter
Richter Rasen Company, Austria

The German Turfgrass Research Institution - FÖRDERERKREIS LANDSCHAFTS U SPORTPLATZBAULICHE FORSCHUNG e.V. (FLSF) held its annual conference in Vienna, Austria this year from July 29th to 31st and was organized by Alexander Richter (Richter Rasen Company and ITS director) and Hermann Richter (past ITS director) from Austria. Attendees of this non-profit organization were predominantly from Germany, Switzerland, and Austria!

Topics of talks were:

1) New description of fertilizers in Germany for landscape and sportsfields presented by founding member Prof. Dr.Werner Skirde.

Hermann Richter (middle in pink shirt) together with Prof. W. Skirde (left side) and Dr. Paul Baader (right side) discussing turfgrass cultivar testing.

2) News from the working group "History of Turfgrass Research" in German speaking countries like Germany, Austria, and Switzerland. This work started with a initial meeting of "old boys" Werner Skirde of Germany (who started his work on turfgrasses at Justus Liebig University in 1964. He was the lead person for creation of DIN Standard for sportsfield construction and finalized his University career after 40 years officially in March 1994), Sven-Ove Dahlsson, ITS member and director from Sweden, Henk Kamp, from NOC*NSF Papendal Netherlands 2009 in Frankfurt, and Dr. Paul Baader, chairman of FLSF Giessen sponsoring organization of this working group. European Turfgrass Society (ETS) President Marco Volterrani (university Pisa Italy) is currently discussing with board to take this idea over and expanding this work for all of Europe and future publication for these data.

Further news from DIN Standard and AG RASEN of DFB (working group Turfgrass of German Soccer Federation) for rootzones and developments/ problems in creation of a new DIN Standard for sportsfield construction.

Prof. Dr. Werner Skirde (age 81) the doyen of German Turfgrass Science and his wife Waltraut looking to RR sports turf rolls grown on rootzone with 80% Blue grass content (2 years old).

Attendees of the FLSF conference during an excursion to RR farm in Slovakia standing on Europes largest golf bentgrass green (10 hectares) grown on natural silica sand rootzone according to Dr. Stephen Baker STRI recommendation for golfgreens construction 2005. One attendee tried to make the longest putt for the Guiness book of world records.

Alexander Richter executing the traditional sod strength test according to Austrian standards Ö-2606 which require that you must being able to lifting a sod roll of approximately 1.5m in length without problems.

3) Dr. Joerg Morhard from University Hohenheim, near Stuttgart, spoke about his studies on advanced test methods for measuring strength and shear tolerance of turfgrass sods (especially for sportfields).

He has created new equipment for this purpose, which received a lot of positive feedback from all attendees! Hopefully sod quality will be correctly measured and identified with this tool in the near future!

4) Dr. Frank Molder of Germany spoke about his work on seed blends for use on runway hard shoulders at the Zurich, Switzerland International airport.

5) Hans Graber of Switzerland discussed his successful experience with lava based sports field construction that is used 2 months each year as a horse jumping track in Switzerland.

6) Prof. Ellen Kausch talked about her study on salt tolerant shrubs suitable for the city environment.

Excursions were made to learn about Prof. Florin Florineth Gravel turf study at Agricultural University, Vienna, Austria together with Univ. Ass. DI Dr. Ulrike Pitha, and DI Bernhard Scharf from BOKU, Vienna!

An additional excursion was taken to Richter Turf Farm in Slovakia to see the biggest continental European cultivar testing field and RR sod production on the best European natural silica sand rootzone (according to a study by AG RASEN of DFB) for sports field construction. There was also discussion about the developments and further steps for the advancement of high quality sod production.

The meeting ended with a tour and dinner in the historic city center of Bratislava, the capital city of Slovakia.

Gravel base turfgrass test plots at the Agricultural University, Vienna, Austria

Three extended Scandinavian Research and Development Programs

by Maria Strandberg, STERF Director, Sweden

Scandinavian Turfgrass and Environment Research Foundation (STERF), has decided to prioritize and play a key role in establishing international R&D programs important for the golf and turf industry on: Sustainable water management (WATEURF), Integrated pest management, and Winter stress management. STERF's ambition is to initiate and fund some new research projects within each area from 2011 and forward.

Sustainable water management

WATEURF - Water And Turf – Efficiency and Use Reduction for the Future – is led by STERF in cooperation with Bioforsk, Aquatrols, Alterra, Wageningen University, and Cranfield University. The network was initiated to bring stakeholders and researchers together around issues of water and turf, and to define a strategic research agenda related to sustainable use of water in the maintenance of turfgrass. WATEURF's goal is to provide science-based information on integrated management practices, based on existing knowledge and new research results, to reduce water consumption, protect water quality and document the effects of well managed turfgrass areas on water resources. Based on STERF´s model of bringing stakeholders and researchers together, and defining and implementing a strategic research agenda, WATEURF will develop opportunities for direct involvement by golf and other turfgrass sectors. Information generated will be used with various measures for training and education.

A wide array of stakeholders are being contacted to introduce WATEURF and request input for a "Water and golf in Europe" paper. Stakeholders will also be invited to become part of the open network. While the primary project at present is preparation of the foundation paper, other activities are anticipated, for example collection and dissemination of existing scientifically based information on management practices that can increase the efficiency of water use on golf and other turf areas and the impacts of golf courses on water quality – both positive and problematic. Two underlying perspectives of the WATEURF network are 1) that the turfgrass industry needs to be proactive about practicing, demonstrating, documenting and communicating its sustainable use of water, and 2) that we can accomplish more by working together as a European network of stakeholders such as researchers, practitioners and suppliers, than we can working apart.

Integrated pest management

STERF´s intention is to play a key role in establishing an international R&D programme on IPM focusing on how all other genetic, cultural, mechanical and biological maintenance practices can be used ahead of pesticide application. Directive 2009/128/EG of the European Parliament and of the Council from 21 October 2009, on establishing a framework for Community action on achieving a sustainable use of pesticides, contains regulations establishing a framework for achieving such sustainable use. This is to be achieved through e.g. decreasing the risks and consequences posed by the use of pesticides for human health and the environment and through the development and introduction of integrated pest management.

STERF together with the Nordic golf sector, Universities and research institutions and authorities will take responsibility for ensuring that R&D activities that are important for integrated pest management are coordinated and executed and that new knowledge is delivered. STERF will contribute to the development of expertise within integrated pest management through communicating new knowledge and tried and tested experience in an integrated pest management perspective. STERF in partnership with consultants and good practitioners will take responsibility for ensuring that a Nordic model for systematic documentation of golf course maintenance is developed.

There is a need for pure research projects and also for demonstration trials under different climate conditions in order to gain a fundamental understanding of the issues within integrated pest management. The knowledge gaps identified are based on suggestions from representatives of the industry and Universities.

Examples of suggested research and trial areas and projects are:

- Variety testing – identifying varieties with high resistance and competitive ability under Nordic conditions
- Golf course maintenance strategies – reducing disease attacks
- Weed management on fairways with minimised use of chemical pesticides
- Effects of green construction and use of alternative chemical pesticides
- Optimal irrigation and fertilisation of turfgrasses
- Development of models for winter hardening and dehardening
- Economic consequences and effects on the natural and work environment of introducing integrated pest management
- Product development - equipment and practices

The complete R&D programme within integrated pest management will be published in STERF website sterf.golf.se during October 2010

Winter stress management

Research and development on optimizing over-wintering will enable the golf sector to:

- Produce a healthy turfgrass that is robust in the unpredictable and fluctuating winter climate imposed by climate change
- Develop and recommend construction and management strategies that ensure satisfactory winter hardening in the autumn, avoid loss of hardiness during winter and produce an early green-up and a good playing surface in the spring
- Develop cost-effective strategies for rapid recovery of damaged surfaces in the spring.

Every year, around 70% of golf courses in the Nordic countries suffer from winter damage, mostly on the greens but also on other parts of the course. The economic consequences of winter damage run into tens of thousands of Euros per golf club every year. The Nordic winter climate varies from cold, stable winters with six or more months of continuous snow cover in the north and east, to unstable winters with fluctuating temperatures and freeze and thaw cycles in central, southern and western regions. Accordingly, the winter stresses vary from primarily biotic (winter diseases) to problems associated with ice, water and desiccation damage. In the future, global warming will most likely result in higher and more fluctuating winter temperatures and this will exacerbate ice and water problems on golf courses. Fluctuating winter temperatures will also increase the risk of repeated loss of winter hardiness. The unique and much diversified winter climate means that past experience and recommendations from other parts of the world may not be directly applicable in the Nordic countries.

Scandinavian Turfgrass and Environment Research Foundation

STERF is a research foundation that supports existing and future R&D efforts and delivers 'ready-to-use research results' that benefit the Nordic golf sector. STERF is set up by the golf federations in Sweden, Denmark, Norway, Finland, Iceland, and the Nordic Greenkeepers' Associations.

Vision

The Nordic golf sector's vision with respect to golf course quality and the environment is:

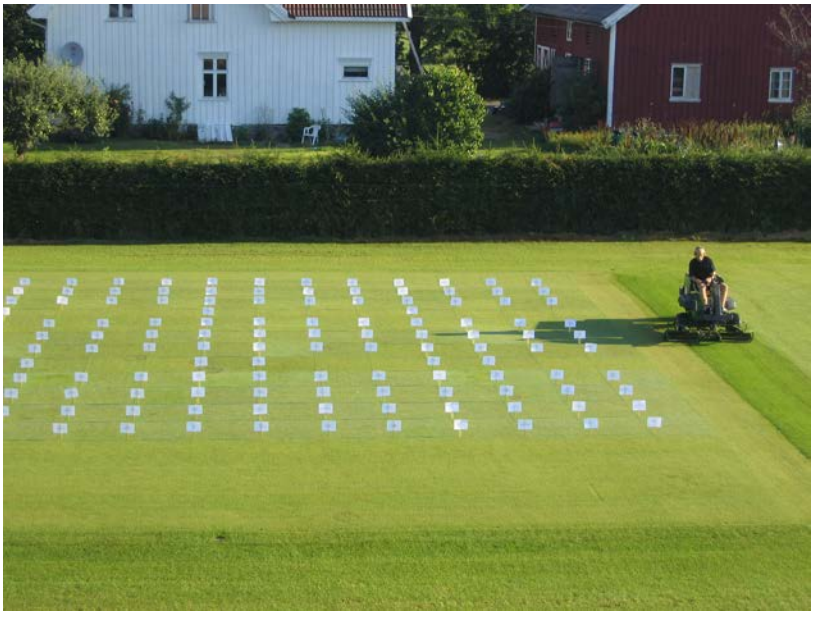
To promote high-quality golf courses, whilst guaranteeing that ecosystem protection and enhancement are fully integrated into golf facility planning, design, construction and management.

The aim of STERF is to support R&D that can help the golf sector to fulfil this vision. The activities of STERF are intended to lead to improvements in golf course quality, as well as economic and environmental gains.

Principal strategies

Approach: Research financed by STERF should be carried out at universities or research institutes (or equivalent) where most of the research capacity is concentrated. STERF has no research capacity in the form of staff or facilities. The work is carried out in project form and is user-driven.
Capacity: STERF strengthens research capacity by encouraging and supporting networks and collaborating actively with key organisations in the field of turfgrass management.
Application: STERF delivers ready-to-use results allowing excellent playing quality through environmentally sound management.
Resources: STERF receives funding from participating golf associations, which can be complemented by funding from other sources.

More information about STERF and ongoing research projects can be found on sterf.golf.se



The turfgrass experimental facilities at Bioforsk in Landvik, Norway, are the most comprehensive in Scandinavia. This is where many STERF research projects are carried out. Photo T. S. Aamlid

Maria Strandberg
STERF Director

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Please send comments, feedback, and turfgrass news articles for future issues to the editor.
If you know any non-members, new faculty, staff, and new personnel involved in turfgrass research who might be interested in joining ITS please forward their email address to me and I will send a complementary copy of the next biannual issue of International Turfgrass.

The deadline for submissions for the next newsletter is January 15, 2011.