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INTEGRATED PEST MANAGEMENT
for turf is needed**

By Trygve S. Aamlid, Bioforsk

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Irrespective of whether they are EU-members or not, the five Nordic countries are now in the process of implementing EU's directive on registration, marketing and sustainable use of plant protection products. The national authorities do not anticipate a total ban on pesticide use for turf, but there are differences in the implementation of the directive and we will continue to see differences as to which pesticides are approved for turf in the various countries. These were some of the take-home messages from a contact meeting in Copenhagen on 27 May 2015 between the Scandinavian Turfgrass and Environment Research Foundation (STERF) and national authorities responsible for implementation of the EU directive.

Among the four thematic areas prioritized by STERF, IPM was the first to have a research and development program attached to it. The program was developed in 2010 in direct response to EU's directive on sustainable pesticide use. The year after, in 2011, STERF published more than 20 fact sheets on best turfgrass management practices, emphasizing preventive control of weeds, diseases and insect pests. These fact sheets are currently used in the mandatory training of greenkeepers who need a certificate for pesticide use. The fact sheets can be downloaded from www.sterf.org and are recommended to all turfgrass managers in the Nordic countries and elsewhere.

Strict and detailed enforcement of the IPM directive in Denmark

Among the five Nordic countries, only Denmark has quantified a goal for the reduction in pesticide use. The Danish target is a 40 % reduction from 2011 to 2015. This applies to all sectors, but it is only for the golf sector that Danish politicians have ruled specific limits for how much each golf course can use. For golf courses applies so-called 'ceilings' for each combination of the three pesticide classes herbicides, insecticides and fungicides and the six golf course areas greens, tees, fairways, semiroughs, high

roughs and roads/other areas (18 combinations in total). During the past five years, Danish authorities have approved several new pesticides for use on golf courses, and each product has been given a 'load index' depending on how harmful it is considered to be for the environment. Among the recent implications of this is that Danish greenkeepers, unlike their colleagues in the other Nordic countries, not only use fluoxypyr (Starane / Tomahawk) but even iodosulfuron (Hussar) and tribenuron-methyl (Express) for broadleaved weed control, as these products are effective at much lower rates and have lower a lower load index per applied area unit.

The greenkeeper associations in Denmark, Sweden and Norway were all represented at the meeting. Vice-president Per Sørensen of the Danish Greenkeeper Association said that at Danish Golf Union (DGU) and the Danish Environmental Protection Agency (EPA) together had developed the on-line registration service 'Greendata' in which all Danish golf clubs have to report their use of pesticides. The program is also useful as a planning tool for greenkeepers in their effort to optimize pesticide use in compliance with the ceiling values.

As the head-greenkeeper at Sydsjælland GC, Per Sørensen had good experience with 'Greendata' and said that he did not find it difficult to comply with the 'pesticide ceiling' on his course. Other greenkeepers have different opinions, and a recent survey by DGU indicated that as many

as 60 % of Danish greenkeepers find that the new legislation lacks flexibility and is too strict. The insecticide imidachloprid (Merit Turf) has a very high environmental load index, and the greatest risk for exceeding the pesticide ceiling occurs if the turf is attacked by garden chafers.

Pesticide certificates and advanced courses for greenkeepers

In order to get their authorization to use pesticides, Swedish greenkeepers have to attend a four day course and pass a final exam. They further have to attend a one-day update very fifth year to maintain their authorization. In Norway, the authorities are currently developing an on-line exam by which pesticide users are obliged to verify their qualifications at regular intervals. The highest requirements is found in Denmark where greenkeepers have to attend a two-week course to receive their first authorization. DGU and the Danish EPA are also in the process of developing voluntary IPM courses at a more advanced level. The first course of this kind was held during the winter 2014/15 with about 25 participants, and the response was overall positive. For this course the Danish authorities have no commissioned STERF/DGU to develop a research-based curriculum at a higher level than the fact sheets that are used at the basic courses.



Participants at the meeting between STERF and national authorities responsible for pesticide legislation in the Nordic countries; Agne Strøm from the Norwegian Greenkeeper Association, Ilkka Kaivosoja from the Finnish Golf Federation, Torhild Tveito Compaore from norwegian authority Mattilsynet, Bruno Hedlund from STERF, Pål Melbye from the Norwegian Golf Federation, Torben Kastrup Petersen from the Danish Golf Federation, Per Sørensen from the Danish Greenkeeper Association, Stefan Nilsson from the Swedish Greenkeeper Association, Maria Strandberg from STERF, Magnus Sandström from the swedish authority Jordbruksverket, Bjørn Gunnlaugsson from the Environment Agency of Iceland, Anita Fjelsted from the danish authority Miljøstyrelsen and Trygve S. Aamlid from the Norwegian Institute for Bio-economy Research.

Photo: Torbjørn Kastrup Petersen.

Need for training of environmental officers in Swedish municipalities

In the Nordic countries, only Sweden has introduced legislation by which it is up to the municipalities can decide if a particular pesticide can be used or not. An important principle in the new Swedish legislation is that a certain pesticide is forbidden to use unless a permit has been issued by the municipality. This implies a great need for education of municipal officers who in many cases neither knows golf nor the most common turfgrass pests. In particular, there is a need to update officers about the risk for surface runoff and leaching of pesticides from golf courses to ground or surface water. A synopsis

published in 2014 of results from earlier STERF projects on fungicide leaching from sand-based golf greens can be downloaded from www.sterf.org, but there is a need for similar studies into fludioxonil (Medallion) and other fungicides that have been approved more recently.

Mutual recognition does not mean common registration

EU's new pesticide directive divides Europe into three climatic zones for pesticide approval. Together with Estonia, Latvia and Lithuania, the five Nordic countries Finland, Sweden, Denmark, Norway and Iceland make up the Nordic/Baltic zones. One of the aims of the directive is to

simplify and speed up the registration process as each country is supposed to recognize efficacy trials and risk assessments in other countries within the same zone. Before it could take several years to reach a decision about an application pesticide registration in one particular country, but the new directive gives new and much shorter deadlines for new active ingredients as well as for new formulations at the national level.

The principle of 'mutual recognition' is, however, not a guarantee that the same pesticides will be approved in all countries within one zone. It is still up to the national authorities to take the final decision, and this may vary from country to country depending on much emphasis is put on different pesticide properties. For example, Danish authorities tend to be concerned about pesticide persistency and the risk for contamination of ground water which is virtually the only source for drinking water in Denmark. In contrast, Norwegian authorities put more emphasis on the risk for surface runoff because of the mostly rugged topography, high precipitation and frequent fluctuations between freezing and thawing in this country.

New rules for phosphites and biostimulants

The new EU directive defines as 'Plant protection products' all chemical or microbial formulations that are applied to prevent or control pests. For example, this includes seaweed products or other plant elicitors whose main impact is to induce resistance to disease. In contrast, products that are applied mainly to improve plant uptake of nutrients or to increase their tolerance to abiotic stresses such as drought, heat, freezing temperatures, wear, ice cover or submersion can still be marketed as biostimulants.

According to EU's definition, it seems likely that products that are applied with the intention of reducing dew formation and thus foliar diseases, will be considered as pesticides. EU also recently ruled that phosphites shall be regarded as plant protection products. On the other hand, soil surfactants which mainly affect hydrological properties will most likely escape the new rules as their main purpose is not to prevent diseases. These distinctions are not always easy, and the meeting agreed that is important to maintain the good dialogue between the authorities and the turf industry and to avoid decisions based on lack of knowledge or false premises.