Anna Joelsson Sotting, Golf Course Superintendent at Chalmers GC, in Sweden reports on activities in the frozen north.

I was in the middle of a time when both Susanne Lindstrom, Head Greenkeeper at Partille GC, and I were spending more than 15 hours a day, at work. Susanne had been installing a brand new pumphouse, the results of the irrigation salesman spending more than 15 hours a day. We called for our famous simultaneous capacity and combine the seminar with a visit to Jeannette at Larviks GC. We organised both housing and travelling arrangements, but there was only one thing missing – a good chef – there are not a lot of McDonald's in Norway, since Norwegians only eat raw fish!

So we called on Carl-Axel Hennstrom, Head Greenkeeper at Ekerums Golf and Country Club. He quickly collected his Big Bertha, his cookbook and picked us up.

We went to Norway and Larvik GC, a course designed by the Swedish Architect Jan Sederholm. He must have been in a good mood when he designed this course, because it was absolutely gorgeous. The greens where lush like a Swedish mushroom's dream. This is due to the fact that they had been covered with a thin acrylic canvas for eight days. The fairways were so even that it was almost insulting and the bunkers so strategically placed that you shot from one bunker to another. Larviks GC is not just famous for the fantastic course but for the Larvik invitation which is played here in July. Last year golfers like John Daly, Jesper Parnevik, Colin Montgomerie, Ian Woosnam and many others played here.

After having scrutinised the surroundings we found that this was more than just a great golf course. We found a genuine farm estate, with cattle and also a big and beautiful castle, a valley full of deer and cabins for hire – all made with a Nordic natural materials like domestic woods, stone floors, roof paintings. This is an estate with a Championship Course with a Nordic touch, it's something special, one of a kind and it could only be in Norway.

Enough of impressions of the course. After an 89 I was rather tired and it was time to do what we came for – attend the seminar. We all got a warm welcome from our Norwegian colleagues and the seminar initiated by Stal Bo, the President of the Norwegian Golf Association.

Dr Paul Rieke talked about the importance of identifying physical soil problems on golf courses. If you have, for instance, a problem with your greens you must localise the problem in order to do something about it.

- Is it a compaction problem? A soil layer problem? A thatch problem? A drainage problem? A water holding capacity problem? A nutrient CEC problem? Or a combination of the above? He talked a lot about thatch which is caused by compacted soils, acid soils, overwatering, aggressive species/cultivars, improper mowing practices, improper use of pesticides or a badly balanced fertilisation programme. The most efficient way to keep the thatch layer to a minimum, was to topdress frequently with small amounts from the start. Once you've got a problem it's a lot more work to get rid of thatch with verticutting, heat, low coring and so on. As always it is best to do it correctly the first time (easier said than done!).

He also said that grass had a low IQ-value – this is my personal Swedish translation and should not taint Dr Paul Rieke – since the grass does not care if it gets the fertiliser in granules or solved in water and sprayed on. This may very well be, but I have my own idea of how to treat my greens. My recipe is "treat your greens like you, yourself would like to be treated".

I have been thinking about my Penncoast, bent greens and found out that they are almost identical with the human being. I base my theory on the fact of several similarities. Both grass and humans -

1) consist of cells, 2) we need a good environment to feel good, 3) we could get ill (cold virus, fungus disease), 4) sometimes we need medicine to cure the illness (penicillin, Roval), 5) some humans/grass are stronger than others, 6) we need nutrients to survive, 7) we all die eventually, 8) we breed, 9) we prefer the warm summer, 10) we do not like it when other people walk on us.

Julie Dione told us about the trials made mainly in Canada but also in Norway and Sweden with different winter protective covers on Poa annua greens. Winter damages are caused by three major factors, cold temperatures, turf grass diseases and dissection. The snow cover is an important fact, it has a good insulating cover with low thermal conductivity, but the problem is that sometimes it gets to much and sometimes to little. The snow cover is some winters over 1 meter thick and rainfall will also destroy the good snow cover. Industry offer several protective cover materials but they do not have precise recommendations on their use under northern climate.

An effective winter protection programme must: 1) Include a sound fungicide protection prior to the covers, 2) always use impermeable protective covers, 3) consider local winter conditions and snow cover, 4) monitor temperature profile under covers, 5) install and remove covers at the right time, 6) use spring covers after removal of winter protective covers, 7) recognise that winter covers will never replace good turf management.

Winter protective covers are invaluable tools for the management of cold stress. The research provides information in an area where there was a real lack of information. Winter protection of golf greens requires knowledge on cold stress physiology, cool-season disease control, local winter micro-climate and protective covers.

The seminar finished, and then the first working day after the seminar was over, both Susanne's and my greens were white, not with snow, but with a spring cover mat.