Only by joint forces are we able to improve. Much of the research in the past has focused on physical aspects of the substrates. I believe that more focus will be put into the biological aspects of the growing media of which peat will still constitute a big part, since we still do have enough peat, and because the amount and knowledge of other alternatives is still very limited.

Peat Control in Nurseries and Peat Declaration

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When nurseries receive peat products for use as growing media, these should be controlled and tested to ensure quality. By doing so the nurseries can avoid any problems with low quality before they use it in plant production. Special assays and a form made for this purpose can be of great help (Hodnebrog and Selmer-Olsen, 1998). The companies who produce and sell growing media are responsible for their products and still have to control and test their own products.

ORDERING AND RECEIVING GROWING MEDIA

Always write down what you have ordered, the quantity, from whom you ordered, juncture of delivery, etc. Control the confirmation note of your order and keep it. The same person who ordered the growing media should control and do the tests when it is delivered in the nursery. That person should ask if this is what was ordered. That person should look for damaged bags and especially for dirt outside the packs, asking whether the weight is normal. Each delivery of peat should have an identification number, which follows the peat during the whole growing period. In case of reclamation this would be of great help.

QUALITY CONTROL

Take samples of the peat; the smell must be fresh. If this is not the case there can be biological activity leading to loss of nitrogen or toxic elements like sulphite and nitrite. Under special circumstances such conditions also can arise when peat is stored in the nursery. A clever nurseryman can look and feel if the peat has a light, good colour, the right fibre size, and the degree of humidification expected compared to his order and to labelling. If the peat has problems with absorbing water and holding it, it may indicate that the peat has gone through a self-heating cycle caused by microbiological activity (Timenes and Hodnebrog, 1998). Such peat has to be returned and should not be used as growing medium.

CONTROL OF CONDUCTIVITY, PH, AND NITRATE

The nurseryman can easily test conductivity, pH, and nitrate content (with nitrate sticks) in the peat before use. One extract can be used for all these tests. The water content in the peat has a great influence on conductivity, so a standardised procedure has to be used every time.

To get a more exact picture of the amounts of nutrient elements, which are available to the plants, it is necessary to send samples to a laboratory for analysis by the Spurway/Lakanen method (Selmer-Olsen, 1987).

CRESS GERMINATION TEST

A cress (*Lepidium sativum* L.) germination test can give us an indication of the quality in relation to growing trials. Cress tests probably should be more widely used.

AIR CAPACITY

A test of air capacity will tell us the volume filled with air after free drainage from a pot that previously has had all pores filled with water (water capacity). Air capacity tells us about quality and structure of the medium. Do we have to be careful about how much water we give the plants or do we have to mix it with other products to obtain better aeration conditions in the peat? When the pots are filled with peat, pot size and pressure have an effect on air capacity too. Because of this the method has to be a standardised procedure, and it is best if the same person does the tests every time. Measuring air capacity can easily be done in nurseries.

By performing the above mentioned control and tests, the nurseryman can make up his mind if the peat received is a good growing medium for plants or if the peat should be returned.

GROWTH CONTROL

If an identification number is given to each peat delivery, the nurseryman is able to follow the plant growth in this particular batch. Such observations will be helpful if it turns out that reclamation later on is necessary.

PRODUCT LABELING

The Committee for Standardization in the European Union is working on a standard for labeling of growing media (Hauken 1999, pers. comm.). I am only presenting a few aspects that are of great importance for the nurseryman:

1) **The Constituents of Growing Media.** In the Committee report it is proposed that only the major ingredients (above 10%) have to be labelled. From a growers point of view all ingredients should be labelled.
2) **All Additives and Their Purpose are Proposed as Optional Labelling.** These should also be obligatorily labelled.
3) **Methods of Analysis for Nutrient Content.** Three standard methods will be used to control the amount of nutrient elements in growing media (Daldorff, 1999). Three extraction solutions will be used.

- Aqua Regia, to control total amount of nutrient elements.
- CAT ($CaCl_2$/DTPA) method, to control amount of nutrient elements available to plants.
- Distilled water, to control amount of nutrient elements available to plants.

ADVISORY SERVICE — THE SAME METHODS?

Today the advisory service uses different methods to evaluate the amount of nutrient elements in growing media. Spurway/Lakanen, CAT, distilled water, and Al-extract (Daldorff, 1999) are different methods used in Scandinavia. A change to new methods of analysis can cause problems because we don't have enough experience and normative references to new values. We should use common methods in the advisory service. Nutrient elements given in the literature as a norm for relevant amount in growing medium are worthless unless the method of analysis is given. Reference values must be given for every method. Do we still want different methods of advice and the labeling of growing media?

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Self-Heating in Peat

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INTRODUCTION

Favourable physical and chemical properties as well as a low content of weeds and pathogens make peat an ideal growing medium for plants. From harvesting till processing the peat is stockpiled. During this storage period self-heating may occur. Self-heating causes not only substantial losses of peat (Gärdenäs and Thörnqvist, 1984), but also results in a peat product that may inhibit seed germination and plant growth (Wever and Hertogh-Pon, 1993).

MATERIALS AND METHODS

Peat samples were collected from different mires in Norway being exploited for horticultural use. Seeds of lettuce (*Lactuca sativa* L. 'Rubett') were grown in these peat samples exposed to different levels of self-heating. Chemical analyses of the peat samples were performed by traditional methods (Ranneklev et al., 2000). Total organic carbon (TOC) and chemical-oxygen demand (COD) were measured in the water extract from the pH measurements. Total organic carbon indicates the content of organic matter, while COD indicates a combination of content and type of easily oxidised organic matter.