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Report from study trip to the company Piccoplant

- **To gain more information about introducing vegetative *in vitro* propagated plants to the forest plant market.**

Background

My PhD project is one out of eight founded by the research school of forest genetics, biotechnology and breeding at the Swedish University of Agricultural Sciences. Sveaskog/Svenska Skogsplantor is my host company during my research project, and during this time I will have the opportunity to do one year of industrial internship as a part of the project. The NordGen Forest scholarship granted to me was used to go on a study tour to Germany between May the 2nd and 4th.

The aim with my research project is to study the nitrogen metabolism during embryo development of *Picea abies* (Norway spruce) and how different nitrogen sources may affect embryo development into a normal plant. I am using the *in vitro* method; somatic embryogenesis, as a model system to study the details of the nitrogen metabolism, from an early stage embryo to a plant. The results from my project can have direct implications in the efforts to start an industrial factory of Norway spruce plant production by somatic embryogenesis which are supported by Sveaskog together with other Swedish forestry companies. The most urgent reason for exploring alternative ways of propagating Norway spruce plants is because of the recent year's pest and pathogens problems on the Norway spruce cones and seeds. These problems have created a reducing production and storage of seeds for seedling production used for forest re-generation. Furthermore, through somatic embryogenesis it is possible to exploit the advantages in tree breeding in a faster way than through common propagation systems like seed orchards or cutting propagation.

The trip

Located in the town of Oldenburg, the biotechnology company Piccoplant have specialised in micropropagation. They use an *in vitro* method where they take offshoots from an elite mother plant and place it in a sterile container containing a solution with nutrients, under adjusted growing

conditions new small plants are developed. With this method, Piccoplant is the world's largest producer of lilacs with a yearly production of 750,000 lilacs plants with over 300 different varieties. Moreover, they also have micropropagation for varieties of rhododendron, bamboo, grass and poplar. The managing director and founder Elke Haase was giving us a tour around in the laboratory and nursery. I was impressed by the logistics behind this big operation. There are at least two years, and several of different steps from the *in vitro* growth until it is a finished container plant ready for delivery to the customer. Most of their plants are exported and the typical customer are agricultural and energy industries as well as commercial clients.

I got the impression that there is a difference in awareness between the forest plant customers and the ornamental/flower plant customers. In particular, the customers' knowledge about the propagation techniques. For example, a customer buying just few plants of a single lilac variety are most likely not reflecting about the genetic variation. Furthermore, information about how the lilacs were produced using the *in vitro* micropropagation technique might not ever be explained, and the customers rarely asks about it either. In the forest sector the discussion about maintaining the genetic diversity is important for the customers. In addition, deployment of micro- (clonal) propagated material is regulated within the area of re-forestation to be limited.



Picture 1. *In vitro* grown poplar plants.



Picture 2. *In vitro* propagated poplar plants, here transplanted to their containers for continued growth in non-sterile conditions.

After the visit at Piccoplant we travelled to two German plant producers; Ostermann Forstbaumschulen (Rellingen) and H.O. Stoldt Forstbaumschulen (Osterstedt). The spring planting out in the forest was about to finish and we were told that it have been a fine year for planting. Mostly, since the weather have been good, not to warm and not too much rain. We were guided around the area where the plant production was made, from the preparation of the seeding site to the transplanting and final product. Since Svenska Skogsplantor do not produce plants in bigger sizes at our own nurseries we have contracts with both Ostermann and Stoldt to produce such assortment of plants.



Picture 3. Spruce plants sown last year.

Final comments

For me the trip was interesting and the outcome is a new contact in the network of people which can contribute with their expertise with *in vitro* propagated plants. The problems with the pest and pathogens damaging the Norway spruce cones and seeds are not easy to resolve, and may not be resolved in the nearest future. Therefore, alternative ways of propagating Norway spruce plants are needed. How we introduce those micropropagated plants to the forest market I believe is thru providing as much information about these propagation methods and the plants produced as possible. The more information available, less is the risk that it will be perceived as artificial and scary, and perhaps achieve a positive attitude towards the new propagation methods.

Summary of the accounts.

Expenses	Expenses (NOK)
Flight ticket	~3200
Accommodation (2 nights)	~1300
Car costs	~2000
SUM	6500