

## **The Influence of Indoor Plants on the State of Health of Office Employees**

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Plants do not only serve as a means for processing air, they are also part of the original ecological system from which man evolved. In human biology, physiology and geno-type have changed very little in the last 10,000 years, whereby changes in human environment are fundamental. When looking at the last 50 to 70 years one notices that in the western world a far reaching urbanisation has taken place. At present, millions of people live with little or no contact to nature - without woods or open country-side, lakes, parks or gardens. Beyond this, our present life-style - at least in Northern Europe - results in the fact that 80 to 90 percent of the time is spent indoors.

The specialist field covering the influence of the environment on human psyches is called environmental psychology. Environmental psychological studies have shown obvious links between well-being, psychological stability, stress levels, other important aspects of human life and environmental factors. All these studies indicate that nature (such as plants, lakes and woods) can offer an important contribution to the reduction of stress. An urban environment, however, causes psychological stress.

### **Hypothesis**

The hypothesis on which this study is based, is that an integration of plants into our direct environment - inside buildings - has a direct influence on how people evaluate their well-being and state of health. In our opinion it is possible to collect data shows how a person evaluates his or her state of health and then to connect this data with the presence of indoor plants.

### **Short description of the study**

The study of the influence of indoor plants on the state of health of office employees was carried out with the Department of Horticulture and Crop Sciences and the head-office of Statoil Norge A/S. 62 people took part in the study.

The offices were standardised as to the size (10 m<sup>2</sup>) and the window area. Using a standardised questionnaire we collected data about how the test persons evaluated the room climate and how, in their opinion, this had an effect on 12 different illness-symptoms. These symptoms are, according to earlier studies, indicators of problems with room climate. During a control period of four months in autumn 1994, background information was collected every two weeks, in order to achieve a "control-level" of the test persons.

29 offices were equipped with standardised indoor plants ("plants-group"), while the other 32 offices formed the control-group. The plants were introduced into the offices in February 1995.

During the months of February, March and April the test participants filled in the standardised questionnaires every two weeks.

### **Preliminary results**

The preliminary results after the first year of the study indicated that plants do indeed have an effect on the subjective evaluation of the state of health. The results can be compiled as follows:

1. Office employees with plants in their offices had less subjective health complaints linked to the room climate than the test persons that had no plants in their offices.
2. The symptoms, that were reduced the most in the "plants-group", were headache and skin irritation of the face, scalp, ears and hands.

These results could underlie different factors. At this moment in time though, we are not able to establish which are the most important factors. It is quite likely that interaction of psycho-social factors ("I am receiving attention"), environmental psychological factors (integration of a natural element indoors) and physiological factors (air filtering, increase of humidity etc) is the cause of this.

### **Prospect**

The question is, however, whether or not the results from this study will still be valid over a longer period of time. In order to achieve permissible results, it is necessary to prolong the study. We also need information about how and in which way the effects will change during the different seasons. If these effects can still be proven after a further year, then plants are a very important factor for the reduction of complaints linked to room climate. Plants could, in this way, be an important means of cost reduction in the area of short term sickness due to minor ailments and would be a contribution to the effectiveness of a company. A further - and possibly more important - point is that this would increase the well-being of the employee and therefore the quality of his/her work routine.