



## NJF-Seminar 380

### **Adaptation of Crops and Cropping Systems to Climate Change**

Book of abstracts

Arranged by NJF section II, Crop Science

Dalum Landbrugsskole

**Odense, Denmark November 7-8, 2005**

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Nordic Association of Agricultural Scientists

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## Adaptation measures of Finnish agriculture to climate change

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Under the current climatic conditions, the northern frontier of major cool climate field crops, fruit crops and ornamentals crosses Finland between 60 and 65 degrees latitude or the frontier lies just to the south of Finland. The current and projected trends of milder winters, earlier springs and slight changes in precipitation (Jylhä et al., 2004) suggest that new crop production opportunities will open within a few decades. To gain from the changes, breeding and testing programs for new crops and varieties are needed in the near future.

Potentially negative effects of climatic change are increases in pest and disease risks, nutrient leaching, erosion and soil compaction, and greenhouse gas emissions. Also overwintering problems may arise due to periods of abrupt warming during winters, lack of snow cover, or lack of ground frost. To minimize the negative effects, new cultivation techniques have to be taken into use. These include promoting direct drilling, constant green cover on the field surface, integrated and more frequent protection measures against pests and pathogens, and breeding of pathogen resistance to a wider variety of crops. Old traits such as growth cessation of overwintering crops during winter time, whether or not the temperatures rise, should also be maintained.

*Agrifood Research Finland* is to launch in 2006-2007 a new project aimed at stimulating measures to adapt to climate warming in the North.

The tasks we plan to carry out are: (1) modeling and testing of risk of cold and frost injury to perennial crops under conditions of warmer winters and earlier springs, (2) estimation of suitability of new winter type field crops, (3) study of yield formation of varieties originally adapted to more southern conditions under long day conditions, (4) formulating methods to estimate effects of drought and increased rain intensity on cereal yield, (5) estimation of pest risks and monitoring pest migrations, (6) modeling of nutrient losses from field crops, (7) estimation of future changes in soil structure and biodiversity, (8) estimation of the need for new cultivation methods, (9) long term limits of climatic competitiveness of Finnish agriculture.

The program will consist of different projects carried out together with both national and international partners, and funded by several organizations.

Jylhä, K., Tuomenvirta, H. & Ruosteenoja, K. (2004). Climate change projections for Finland during the 21st century. *Boreal Environment Research* **9**, 127-152.