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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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Some key factors in economic adaptation of agricultural sector to climate change in Finland

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Estimated beneficial effects of the climate change in Finland include increased crop yields and reduced winter time energy consumption of farms. Longer growing period may also result in better and more homogenous crop quality of certain crops. The estimated reduced risk of frost as well as high and more homogenous quality of crops is expected to decrease economic risks, increase relative profitability of certain crops and diversify crop production in Finland. Higher crop yield and quality would also benefit animal production.

However, it is not sure if any significant economic benefit can be obtained from the climate change since also increased costs of plant protection. Increasing crop and biomass yields make crop production more competitive only if these additional costs are covered. Furthermore, the competitiveness of Finnish agriculture in international markets may not increase if similar net improvements in profitability take place in major production areas in Europe and elsewhere.

The climate change will influence the relative profitability of different crops and animal products. For this reason the implications of climate change on agricultural production, farm income and competitive position on international markets were evaluated using a sector level economic model. The approach allows consistent treatment of different products and price changes as well as changes in production allocation in different areas in Finland. First simulations show that crop yields need to increase considerably, by at least 15-20%, on the average, before any significant economic benefit can be obtained. This result is nevertheless dependent on production and price development in Europe and elsewhere. The potential benefits of climate change also depend on the variety of crops cultivated in Finland in the future. If some special crops currently suffering from high production risks are no longer cultivated due to further de-coupling of agricultural support from production, for example, domestic production will be replaced by imports. Then it will be difficult to build up the entire value chain for these crops later even if climatic conditions become more favourable. Hence higher crop diversity is likely to improve chances of benefitting from the climate change in Finland.