# Promoting production and use of organic potatoes in Northern Ostrobothnia, the northernmost agricultural area in Europe

**L. Hiltunen[1], V. Vorne[1], E. Virtanen[1], Y. Degefu[1], K. Korhonen[1], T. Muilu[1] & M.-L. Tausta-Ojala[2]**

*[1]Natural Resources Institute Finland (Luke), P.O. Box 413, 90014 University of Oulu, Finland*
*[2]ProAgria Oulu/Rural Women's Advisory Organisation, P.O. Box 106, 90101 Oulu, Finland*

## Background and Objectives

The demand for organic products is increasing in Finland. Potato is an important part of the Finnish diet and the demand for organic potatoes is also increasing. However, currently only around 1 % of the potato crops are grown organically. Organic potato production faces many challenges including lack of suitable cultivars and fertilisers and difficulties with disease control. Northern Ostrobothnia, the northernmost agricultural area in Europe (Fig 1), has excellent natural conditions for potato production, but produces only small amounts of organic potatoes.

**The objective of this work is to promote the production and use of organic potatoes in Northern Ostrobothnia.**

## Methods

The project is implemented in four work packages during 2016–2017:

**1)** New cultivars and fertilisers are tested in growers' fields for their suitability for organic potato production.
**2)** The efficacy of new biological products for disease control is studied in field experiments, and methods for early detection of pathogens latently present in the seed potato are optimised.
**3)** The interest in use and production of organic potatoes in Northern Ostrobothnia is investigated through surveys for professional kitchens and growers.
**4)** Field and kitchen demonstrations are organised to provide information on organic potatoes for growers, professional kitchens and the general public.

## Results

The growing season 2016 was warm and wet making the conditions conducive to late blight (*Phytopthora infestans*) infection. The first symptoms of late blight were detected only 50 days after planting and the epidemic developed rapidly. On the most susceptible cultivar foliar blight reached 100% 30 days after first appearance. Total yields varied between cultivars from 5 to 14 t/ha (Fig 2). The marketable yield ranged from 50 to 80 %, and was mostly reduced by small tuber size (< 30 mm). None of the biological control products tested for control of soil- and seed-borne diseases affected the quantity or quality of the crops.

Over 80% of the professional kitchens in the area were interested in using organic potato products (Fig 3), but availability and price limit the use of these products. However, only a small number of farmers was interested in converting to organic farming (Fig 4).

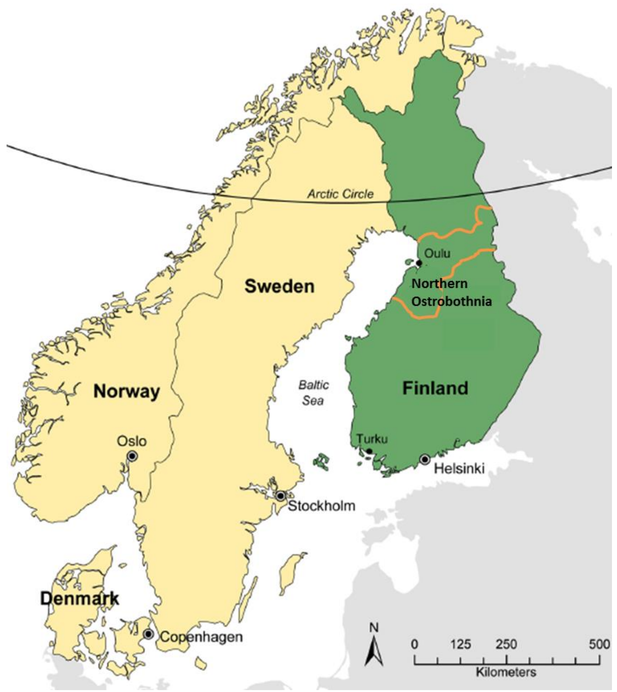


**Fig 1**. Northern Ostrobothnia lies between the 64th and 66th parallells of latitude.

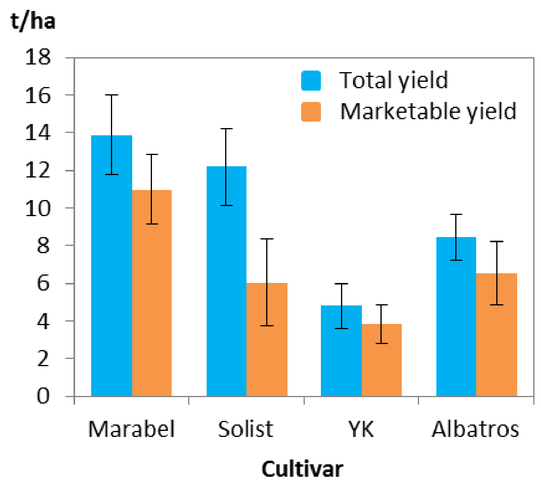


**Fig 2.** Total and marketable yield produced by different cultivars in 2016. The experiment was set up in a grower's field and arranged in a completely randomised block design. The soil (sandy soil, pH 6,3) was fertilised with a green manure mixture of vetch (*Vicia sativa*), oat (*Avena sativa*), Persian clover (*Trifolium resupinatum*) and Italian rye-grass (*Lolium multilforum*) during the previous growing season. Bars represent means ± SD of four replicates per treatment.

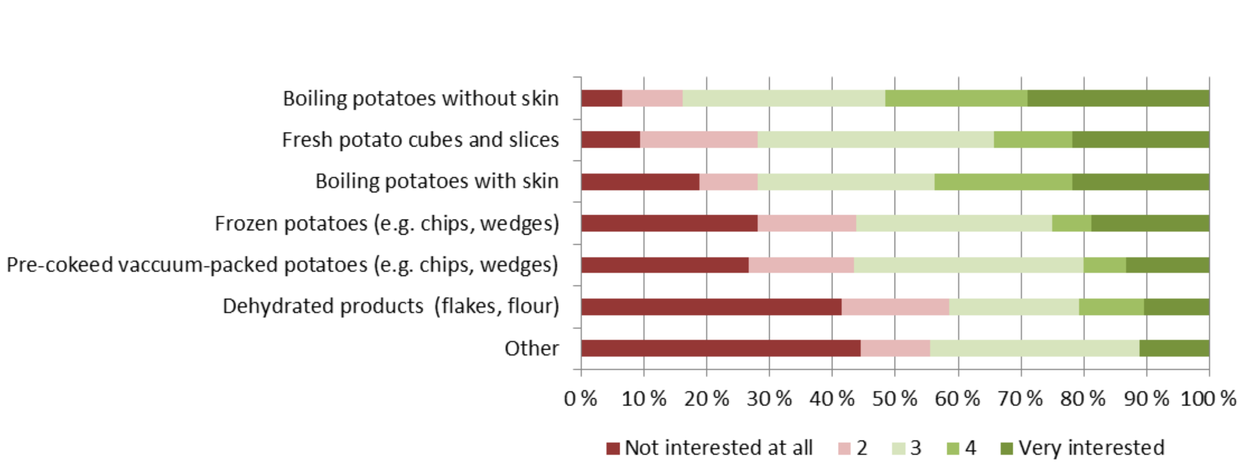


**Fig 3.** Interest of professional kitchens (n=33) in using organic potatoes and potato products. The electronic survey was carried out in Northern Ostrobothnia in 2016.

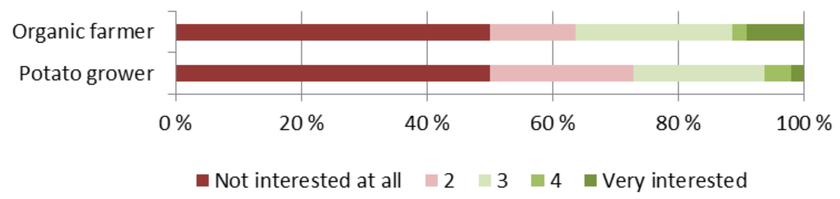


**Fig 4.** Interest of conventional potato farmers (n=48) and organic non-potato farmers (n=44) in converting to organic potato farming. The electronic and postal survey was carried out in Northern Ostrobothnia in 2016–2017.

## Conclusions

- There is increasing demand for organic potatoes and potato products among professional kitchens in Northern Ostrobothnia.
- In contrast, there is little interest among farmers in converting to organic potato farming indicating that special measures are needed to make organic potato production more attractive.
- The weather conditions in 2016 were difficult: early onset of late blight epidemics and excessive rainfall had a detrimental effect on yields.
- In the northern latitudes, organic potato production is especially vulnerable to unfavourable growing conditions. Therefore, more information including several years' field data is needed on methods that can help to make the best use of the short growing season.

Euroopan maaseudun kehittämisen maatalousrahasto: Eurooppa investoi maaseutualueisiin
Elinkeino-, liikenne- ja ympäristökeskus
PETLA
Verdera
Luonnosta
Marjatta ja Eino Kollin SÄÄTIÖ
OULUN LÄÄNIN TALOUSSEURAN MAATALOUSSÄÄTIÖ