



NJF-Seminar 386

**Potato seed: Physiological age, diseases and
variety testing in the Nordic countries**

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Effects of pre-sprouting and nitrogen fertilization on the yield of table potatoes

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The effects of pre-sprouting and nitrogen fertilization on the yield of common table potatoes were studied at MTT Agrifood Research Finland during 1993-1994. A compromise between effects of pre-sprouting and nitrogen application rate on the yield and dry matter content was sought. The experimental layout was a split-split-plot with nitrogen fertilization as a main plots and potato cultivars and pre-sprouting as a subplot. The pre-sprouting treatments were 0, 21 and 42 days. The fertilizer treatments were 0, 80 and 160 kg N ha⁻¹ and cultivars tested were Bintje, Van Gogh and Nicola. Plants from physiologically old seed emerged earlier, had faster canopy development and earlier tuber initiation, formed less foliage and senesced earlier than plants from physiologically young seed. The final tuber yield grown from sprouted seed was markedly higher than yield of un-sprouted seed in all cultivars. The yield increase for 21 and 42 day pre-sprouting treatment respectively was 0.2-6.3 t ha⁻¹ and 0.2-8.3 t ha⁻¹. Physiologically old seed resulted the highest yield increase, 3.1-8.3 t ha⁻¹, at the highest nitrogen application rate. Yield responses of physiologically old and young seed also associated with cultivar and climatic conditions. In 1994 the yield of pre-sprouted seed was markedly higher than in 1993. The old seed of the late cultivar Nicola gave the highest yield increase 5.5-8.2 t ha⁻¹. Pre-sprouting also affected the quality of potatoes by increasing the dry matter content. In a short growing season tuber yield and quality during are affected mainly by intercepted radiation. Physiologically old seed reduces time to emergence, improves haulm growth after emergence and increases the harvest index resulting in yield increase. If growing condition later in season are unfavourable, crops from old seed will produce higher yields than crops from young seed.

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