

Economic analysis of field afforestation and forest clearance for cultivation in Finland

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Abstract

Public policies for field afforestation and forest clearance for cultivation are analysed in the framework of Common Agricultural Policy. Net present values of arable land and forestland are computed for three alternative land uses: traditional cultivation of oats (*Avena sativa* L.), cultivation of reed canary grass (*Phalaris arundinacea* L.) for energy production, and production of Norway spruce (*Picea abies* [L.] Karst.) timber. Net present value of land is calculated for marginal hectare of a typical Finnish farm.

Financial outcomes of alternative land uses are computed using statistics on yields and economic parameters. Experimental data for 38 afforested stands and distance-independent individual-tree stand growth model are used for computing net present values of land under forestry. Cultivation of energy grass gives clearly the highest economic outcome. Maintaining arable lands under traditional food production gives also higher economic outcome than afforestation except for the most successful tree plantations.

Without the analysed alternative agricultural land uses, public support makes afforestation investments profitable even for the least successfully established stands. However, possibilities to continue agriculture in a reasonable scale, or alternatively to sell or rent out agricultural fields to other farms with reasonable scale benefits retain arable lands under agricultural production, and explain poor success of the latest afforestation programme. Rationality of forest clearance depends heavily on the conditions to include new field into the agricultural policy support, age and stocking of forest stand as well as on the conversion costs.

Keywords: common agricultural policy, energy grass, forest economics, incentive, individual-tree model