

SECTION 4

The Effects on the Profitability of Crop Husbandry

4.1. Introduction

Sections 2 and 3 of this case study have considered the effects of climate on crop yields. There is, however, no simple relationship between yield and profitability – and yet it is profitability that ultimately determines which crops are grown, and where. In this section we consider the effect of changes in climate on yields of barley and oats in two regions of Finland, and go on to examine likely changes in the profitability of cultivating these crops.

4.2. The Variability of Gross Margins

We may define “profitability” as the income that remains for the farmer once his variable expenditure, i.e., the costs of seed and fertilizers, use or hire of machinery, wages paid to outside workers, etc., have been deducted (Varjo, 1974). We shall term this gross margin in order to distinguish it from net return (*Figure 4.1*).

The data required here to determine the gross margin per hectare for a given crop are the marketable quality yield per hectare, its market price and the variable expenditure in its cultivation, which are published by the Association of Agricultural Centers (MKL; Varjo, 1977). In addition to the marketable yield, the farmer will, at least in some years, be left with a certain amount of grain of inferior quality owing to adverse weather conditions which can be fed to livestock on the farm. Because of this, grain cultivation can often prove profitable even though the gross margin may not be sufficient in itself to assure a farmer of a reasonable wage for his work excluding state agricultural subsidies.

GROSS RETURN 2970 mk					
VARIABLE COSTS 1247 mk				GROSS MARGIN 1723 mk	
Cost of seed	Cost of fertilizers	Cost of machine hire	Other costs	Wages for farmer 360 mk	NET RETURN 1362 mk
				Interest on capital invested	Net profit

Figure 4.1. Gross return, gross margin and principal cost factors per hectare for the cultivation of barley in 1980. The numbers refer to average national costs per farm in Finland in 1980. 1 US\$ = 3.6 FIM in 1980 (MKL, 1980).

The manner in which the marketable yield, the cost and the selling price mentioned above affect the profitability of arable farming is illustrated in *Figure 4.2*. Comparison of the marketable barley yield (Official Statistics of Finland – SVT III), variable expenditure and gross margins for 1965, 1975 and 1980 in Lapland and Varsinais-Suomi shows harvest yields to have increased by about 1200 kg/ha in both areas over the period 1965–1980, most of this increase occurring between 1975 and 1980 in Lapland but between 1965 and 1975 in Varsinais-Suomi. With the variable expenditure increasing and the market price decreasing in real terms in a roughly similar manner in both areas (*Table 4.1*), the outcome was a pronounced decline in the profitability of barley cultivation in Lapland, which had in any case been low. For the sake of simplicity, the values employed here are those for central Finland, which deviate from those for Varsinais-Suomi and Lapland by less than 3%.

Thus the gross margin, which had been negative in Lapland in 1965, at –230 FIM/ha, reached figures of –900 FIM/ha or worse by 1975. Later, however, the rapid rise in yields, together with a reduction in costs, meant that profitability improved markedly, so that by 1980 the gross margin in Lapland was just over 400 FIM/ha. By comparison, the trend in Varsinais-Suomi is seen to have been more much more favorable throughout. The gross margin in 1965 was 1975 FIM/ha, of which about 750 FIM represented a direct net return. Again profitability declined up to 1975 on account of the lower market price and increased costs, being 1720 FIM/ha in that year. Nevertheless, since the proportion of this gross return accounted for by wages decreased more rapidly than did the market price of barley, partly as a result of increased mechanization, the net return obtained increased to almost 1400 FIM/ha, approximately the same figure as that recorded in 1980. Thus the difference in the gross margin for barley cultivation between Lapland and Varsinais-Suomi diminished from some 2200 FIM/ha in 1965 to around 1300 FIM/ha in 1980. This still means, however, that the figure for Varsinais-Suomi was more than four times that for Lapland, suggesting that although the great difference in temperatures between southern and northern Finland naturally does contribute to the differences in harvest yields, this effect is overshadowed as far as the profitability of crop cultivation is concerned by the very considerable influence of economic factors and agricultural policy measures. This also explains why the substantial increase in yields