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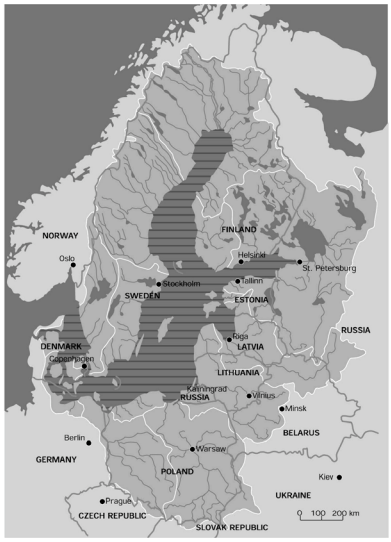
ENVIRONMENTAL IMPACTS OF ECO-LOCAL FOOD SYSTEMS

– final report from BERAS Work Package 2

Artur Granstedt, Olof Thomsson and Thomas Schneider (eds.)



Baltic Ecological Recycling Agriculture and Society (BERAS) Nr. 5

Baltic Sea Region INTERREG III B

Centrum för uthålligt lantbruk

CUL

Finland

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The Finnish study was conducted on five BERAS-farms (called F-BERAS-farms); two in the cereal-dominated south, one in the centre (Tampere), one in the animal-dominated north-west (Österbotten) and one in the east (Juva). In addition a more detailed study of 8 ERA farms located in the Juva region (called J-BERAS-farms) has been carried out.

The average annual nitrogen surplus on the five Finnish F-BERAS-farms ranged between 32–43 kg per ha during the study period with a range among the farms from 27 to 52 kg/ha (for more detailed results, see Appendix 2). This gives an average surplus of 38 kg N per ha and year (Figure 2-13) which can be compared to the calculated average for Finnish agriculture of 73 kg per ha and year for the period 2000–2002 (Figure 2-14). The surplus of nitrogen in average Finnish agriculture is twice that on Finnish F-BERAS-farms with the same animal density (0.6 au/ha).

The calculated average nitrogen fixation including deposition was 30 kg per ha and the calculated nitrogen in produced fodder was 49 kg per ha.

The surplus of P on F-BERAS farms was 3 kg per ha (Figure 2-13) compared to the average 8 kg for the whole of Finnish agriculture (Figure 2-14). Most of the F-BERAS farms have a deficit for P in the balance but one farm with surplus makes average surplus. The lower surplus of P give a lower risk for losses of P compared to average agriculture.

Crop production in terms of N on F-BERAS farms was only nine percent lower but food production (crop and animal products exported) was more than 50 % lower. As for Sweden this can be explained by the higher portion of ruminant clover/grass-based animal production compared to conventional agriculture that is dominated by the more surface-effective grain converted to meat production.

The variation between the farms was rather high. A lower N-surplus was found on farms with a lower animal density and a higher on farms with a higher animal density (Figure 2-15). All F-BERAS-farms with an animal density under 0.7 au per ha show an N-surplus lower than 52 kg /ha.

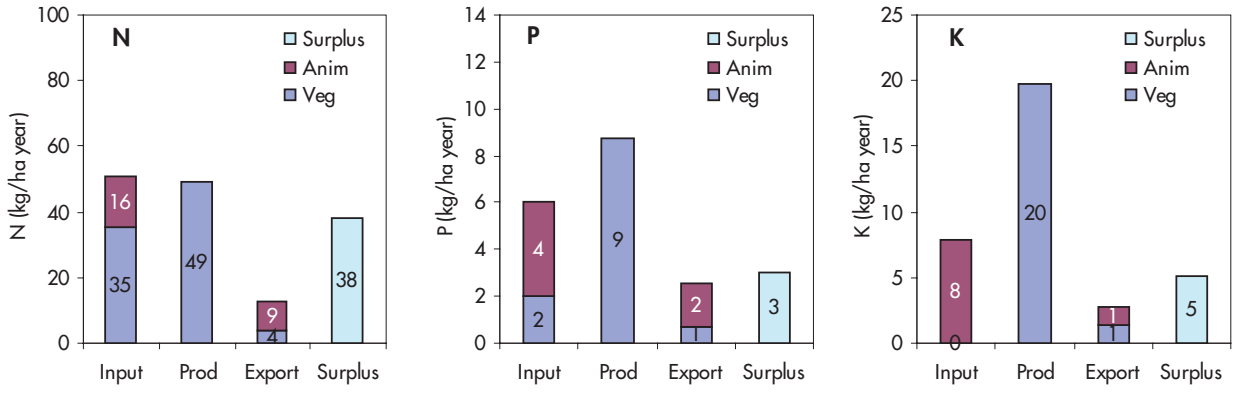

Figure 2-13. Input, plant production, output of farm products and surplus of nitrogen (N), phosphorus (P) and potassium (K) on the F-BERAS-farms in Finland 2002–2004 (numbers do not agree due to rounding-off).

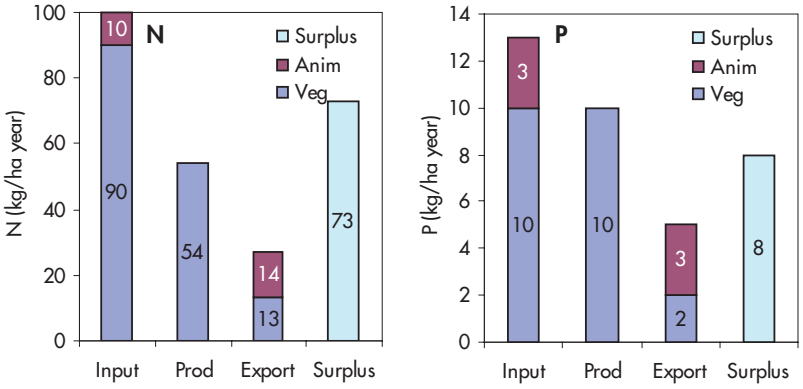

Figure 2-14. The input, plant production, export and surplus of nitrogen (N) and phosphorus (P) in Finnish agriculture, averages per ha and year 2000–2002 (Granstedt et al. 2004). Mean animal density was 0.6 au/ha.

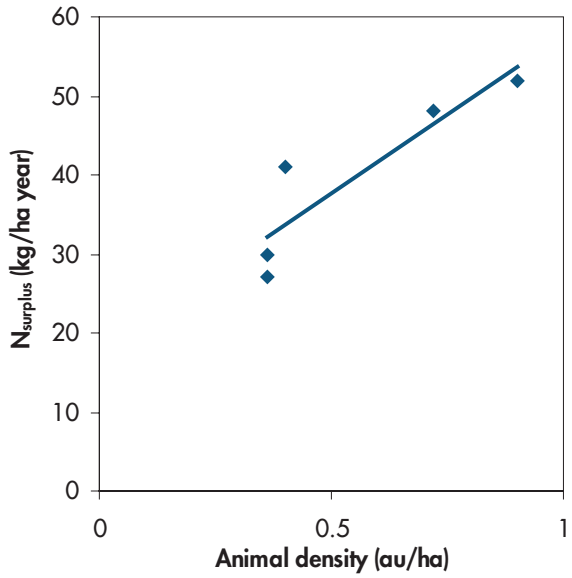

Figure 2-15. Average animal density and surplus of nitrogen per ha and year for the three years period for all the Finnish F-BERAS-farms.