ABSTRACT

Agriculture is a production system in which the economic principles of organisation act in mutual dependence with its ecological boundaries. Objectives: Building on this premise, the paper evaluates performance of a chosen agricultural production system (dairy production in Slovenia) from two complementary perspectives, the socio-economic and the biophysical. Methods/Approach: The latter is presented by means of emergy analysis, which is a system-based approach that measures the aggregate work of biosphere needed for the provision of goods or services in the units of solar energy joules. The novelty aspect of this paper is the introduction of emergy indicators into the standard socioeconomic optimisation model of the chosen agricultural production system. The optimisation model based on linear mathematical programming is designed to empirically investigate different alternatives to the sector’s reorganisation. Results: The results of the optimisation models suggest considerable restructuring of the sector and, consequently, large discrepancies in the sector’s performance. Conclusions: The results suggest that further expansion of organic production systems as a result of a stronger environmental focus in farm management would improve the sector from both, the socio-economic and the emergy perspective. Moreover, even pursuing certain socio-economic targets may improve the sector’s biophysical performance and lower pressure on the local environment.

Citation
