Title Sustainability of horticulture in Europe (environmental, social, economic): examples from the pre- and the post-harvest food chain

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Abstract

Sustainability is a concept and a vision for how mankind deals with the resources of planet earth. Although this concept has a basis that is not time-bound, technological opportunities and pressing challenges for achieving a sustainable development change with time. At present, continued IT-development and miniaturisation (micro, nano) offer new opportunities for technological developments. Food concerns (e.g., pesticide residues in food), globalisation, human health problems in industrialised (and increasingly also other) societies and climate change are actual challenges which directly affect the development of horticulture. This paper presents examples of projects that address environmental, economic or social aspects of horticulture for contributing to a sustainable development. For instance, the European project ISAFRUIT works on innovative IT-controlled spraying technology aiming at a reduction of 80% in pesticide use. Another case presented shows the overriding importance of energy prices in greenhouse vegetable production and how it might remain nevertheless competitive. The domestication of Edelweiss (*Leontopodium alpinum* Cass.) for medicinal and cosmetic purposes contributes to sustainability by developing an economical alternative for the horticultural sector in marginal Alpine areas. Since 2005, *Chalara* black root rot has endangered Swiss carrot production, while with a focused total chain approach, and complementary networking, a R&D-based solution for the problem could be developed within a short time. Finally, the study on environmental footprints and sustainability of horticulture in the United Kingdom shows how it can be valued with regard to sustainability as compared to other sectors of agriculture. Finally, the paper provides some conceptual guidance how, with a simple concept, sustainability can be improved while applying various methods for monitoring and quantifying it.