

Biodiversity, Ecosystem Services, and Organic Horticulture

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Abstract

High-input substitution agriculture dominates world food production, but is the greatest cause of biodiversity loss worldwide. With that loss, ecosystem function (pollination, biological control of pests, weeds and diseases, mineralization of plant nutrients, etc.) is diminished with associated declines in ecosystem services (ES). Conventional agriculture can apply short-term remedies for this loss of ES via oil-based inputs. In organic agriculture, however, most of these inputs are not permitted so the importance of understanding and practicing ecological engineering to enhance ES is high. There is good evidence that biodiversity remains at a higher level in organic agriculture and by using resource economics techniques such as value transfer one can demonstrate the monetary value of this biodiversity. The work presented here shows how returning appropriate biodiversity to horticultural crops can enhance ES to such an extent that variable costs (chemical inputs, labor, fuel) are reduced, as are external costs (to human health and the environment). In addition, marketing opportunities are increased, especially for those countries exporting food to environmentally-discriminating markets. Relevant websites are www.waiparawine.co.nz and <http://ecovalue.uvm.edu/newzealand/>

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