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“Competition for Resources in a Changing World:
New Drive for Rural Development”

Vulnerability of Wetlands

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Abstract

Vulnerability, resilience and adaptation are often used in connection with economics and human risk analysis. These terms are less commonly applied to ecosystems and in this work have been put in relation to wetland ecosystems. Existing definitions and classifications of wetlands are reviewed with respect to their use and concept of vulnerability, resilience and adaptation. The problems that can arise during agricultural use of these very resilient, semi aquatic ecosystems are discussed.

Wetlands fulfil many functions that are important to society. Among these functions are filtration and storage of water, nutrient and sediment retention, biodiversity conservation and flood protection. Through human use wetlands are altered and possibly degraded. This degradation will affect the wetlands ability to fulfil certain functions. The intensity and extent of the use and the ability of adaptation of wetlands are crucial for the degree of change in the functions of each specific wetland.

In this literature review the factors affecting the stability of a wetland are stated and defined. The interaction of factors from the environmental, socio-economic and policy sector are assessed. Wetlands are categorised according to their location (climatic zone), hydrology, and soil type. The agricultural management techniques applied to the wetlands are classified under natural (indigenous), drained (rice-wheat) and wet / irrigated (rice-rice). Yield and productivity declines resulting from possible changes in soil properties are statistically analysed in relation to the wetland categories. Scenarios are derived and being discussed as to how the functionality of a wetland is likely to change under specific management intervention strategies.

Keywords: Adaptation, ecological functions, resilience, yield decline