Land and water management options for peatland development in Sarawak, Malaysia

J.H.M. Wösten and H.P. Ritzema

Alterra Green World Research, P.O. Box 47, 6700 AA Wageningen, the Netherlands
E-mail: j.h.m.wosten@alterra.wag-ur.nl

Abstract
The Government of Sarawak has identified the populated lowland zone of Sarawak as a major region for agricultural development, which will be partly on peat. At the same time the government recognized that the characteristic flora and fauna give the peat swamps in this zone the status of unique ecosystems, which are internationally recognised as valuable wetlands. As a consequence, a balance needs to be established between agricultural development and wetland conservation of these peat swamps. Water management is a key issue in this respect as the challenge is to achieve suitably low water levels to enable optimal crop production and sufficiently high water levels to minimise peat subsidence. For the situation in Sarawak different aspects of water management are quantified and discussed. This is done in terms of the requirement of high water levels on the design, implementation and operation of the water management system as well as on infrastructure and selection of on-farm transport vehicles. The proposed integrated water management approach shifts from an exclusive emphasis on drainage of excess water, to water conservation emphasising drainage in wet periods and water storage in dry periods. In this contribution, values for typical peat characteristics such as subsidence, hydraulic conductivity and bearing capacity are presented. Insight is provided on sustainability of different types of peatland use by showing how these characteristics are related to the imposed water management regime, which in turn, is dictated to a large extent by the envisaged type of land use.

Keywords: peat swamp, subsidence, oxidation, CO₂ emission, bearing capacity, water management