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Sustainable Management of Soil in Oil Palm Plantings

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Research that works for developing countries and Australia

Water management in and around sustainability of soil fertility

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Abstract

Besides preventing deficit or surplus of water that affects development and yield of oil palm and managing surface run-off to minimise erosion and nutrient leaching, water management has a major influence on soil fertility evolution. The soil water regime is closely interrelated with organic matter evolution, soil fauna development and soil physical property changes, especially in peat soil. Under the general heading of 'water management', there are indeed two different but interrelated issues: (i) the water management device design; and (ii) its operation. Design issues have been the focus of much research and are very well documented. System operation requires accumulation of experience and sound knowledge of current field conditions to prevent or reduce the effects of natural hazards. It is often the weak point that research may substantially improve by developing a 'systemic' operational approach to link drainage system characteristics, soil water regime and climatic and hydrological conditions. In the light of the expected adverse effects of climate change (more pronounced dry and wet periods), the issue is of particular importance to avoid risks of flooding and insufficient drainage. The approach could be used to deal with constraints that are often facing extensions of oil palm plantation in flooded plains where it is necessary to consider at the same time external conditions affecting 'drainability' and natural drainage flow, as well as the predictable changes with time in soil physical characteristics.

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