# SUSTAINABLE OIL PALM CULTIVATION ON TROPICAL PEATLAND

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## ABSTRACT

For eons, farmers have been cultivating the land for foods, fuel, clothing and shelter, and subsequently for economic returns and social stability. Mankind has always known the dire consequences of abusing the land, which has taken civilisations with it, and has therefore always attempted to implement the best agricultural practices known to them in order to preserve the soil fertility in perpetuity. This precept can be found in the Sanskrit, the classical, literary language developed from about 1500 B.C. by the Hindus in Northern India. It has also been entrenched in the definition of sustainability by FAO which states that sustainability is for the people and not projects and it must be environmentally non-degrading, technically appropriate, economically viable and socially acceptable.

The oil palm industry in Malaysia has subscribed to these principles to a different degree over time since its commercial plantings in the 1920s. It has also convincingly demonstrated its roles in the economic and social well being of the country and especially prominently at times of recession such as in 1997. However, the expansion of oil palm in Malaysia has now embarked on tropical peat, which is one of the most fragile wetlands in the world.

Tropical peatland is heterogeneous and complex being a system developed from interplay of peat soil, water, vegetation, climate and people. Thus, a major change in any of these factors could result in its degradation to a state where it is difficult to use for other purposes. It should also be recognised that peat is a slowly renewal or non-renewable resource depending on its usage. In Sarawak, the properties of peat are also governed by its current natural vegetation and topography where it occurs. In mixed peat swamp, the peat soils tend to humified quickly and less woody. In Alan forest, the large buttress and recalcitrant hardwood necessitate special treatment at land preparation before planting the oil palms. In Padang Alan forest which generally occurs on peat dome, the peat soil is usually very fibric, woody and extremely low fertility. These substantial differences in the properties of peat soils require site-specific management of both soils and hydrology to enable oil palms to be cultivated sustainably on them.

The current management practices for oil palms on peat are mainly geared towards profitability (economic viability), improvement of the local and country social aspects e.g. provide employments, schools etc (socially acceptable to most) and technically appropriate to the agro-ecosystem. However, the cultivation of oil palm today is not just for high productions but also to minimise its environmental impact. For examples, the timing and frequency are adjusted to avoid applications in months with unacceptable risk of high rainfall to avoid wash out and leaching losses; site specific manuring to reduce nutrient losses; use of beneficial plants to increase biodiversity and population of predators; non-noxious ground vegetation including legumes where appropriate is encouraged to minimise soil evaporation, irreversible drying and possibly, decomposition (oxidation) rate of peat; minimised the use of herbicides and use sources that are not easily leached; and controlled water management to minimise subsidence rate.

With globalisation, comes new challenges to crop production system and oil palm is no exception. Both NGOs and the Roundtable on Sustainable Palm Oil (RSPO) demand new Principles and Criteria on sustainability of oil palm. This makes the goal of sustainability exceedingly nebulous and at times seems rather unreasonable when compared with the requirements for other agricultural crops. Nevertheless, work on the impact of oil palm cultivation on greenhouse gas (GHG) emission from peat, agricultural biodiversity and energy use is on-going and some results will be discussed in the paper.

No extended abstract received yet