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## Opportunities for Oil Palm R & D in Further Meeting the Challenges of the New Dynamics<sup>1</sup>

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*Field based research and development (R&D) has been important in the success of oil palms, and it has always had a strong environmental component. Possible reasons for some decline in active R&D over the last few years include attempted cost saving, knowledge protection, and, paradoxically, diversion towards the challenges of the new dynamics - sustainability, biodiversity, food safety and good agricultural practice (GAP). The economic prospect now poses greatest uncertainties. Labour use is high compared with competing crops, although the worker/product ratio and energy balance are more favourable. Examples here illustrate how economics can be addressed by maximising production efficiency and income through field R&D.*

*The crop by-products (c75% of the fresh fruit bunches [FFB]) are used for mill energy, and some nutrient recycling. By developing these options, mills could produce electricity commercially and greatly increase recycling.*

*Oil and kernel extraction ratios (OER and KER) relate to the potential content of harvested FFB, the achievement of which is affected by a number of factors in practice, in the field and mill. Measuring ERs by bunch analysis and batch milling is cumbersome and expensive. More regular assessment would aid in evaluating agronomic comparisons and treatments, and monitoring achievement in practice. Modern technology ought to make better methods possible.*

*Closer palm spacing gives higher early yield and OER. The long non-productive period between generations is expensive, but it can be reduced by underplanting and felling progressively. Such possibilities merit ongoing investigation. A close-spaced short cycle, with underplanting, could relieve the tall palm harvesting problem.*

*Ganoderma disease poses several unanswered questions, such as the cause of the marked variability in site proneness. The cause of early incidence from root contact with buried old stand tissues is clear, but losses starting about year 10, less so. It is feasible that two different phenomena are involved – such a hypothesis could explain some confounding aspects. Marked family differences can arise in genetic blocks, possibly exploitable, and might explain anomalous field differences. Unnecessary precaution in field practice can be very costly.*

*This and a range of other topics show scope for field R&D. Not all investigations will have entirely positive conclusions, but will enhance skill, and some will stimulate studies in related areas and for other disciplines. Industry effort is needed to invigorate and co-ordinate programmes.*

**Keywords:** Sustainability, environment, bioenergy, recycling, oil extraction ratio, replanting, Ganoderma.