

Growth response of oil palm seedling from decanter cake application as fertiliser substitute in nursery

ABSTRACT

Sustainable waste management is essential to safeguard the environment and corporate interests. Stringent regulations on quality of palm oil mill effluent (POME) discharge led to the introduction of more decanter machines, which increased output of dried POME solid namely oil palm decanter cake (OPDC). Therefore, a field experiment was planned to investigate how OPDC can be directly used as fertiliser for oil palm (OP) seedling to meet the needs of the plants. In polythene bags as planting media, topsoil was combined with OPDC at ratios of 10%, 20%, 30%, and 50%. This was followed by a reduction in inorganic fertiliser at levels of 25%, 50%, a predetermined nutrient deficiency input, and up to 100% for planting medium at a ratio of 50% OPDC to topsoil. Null hypothesis was tested by comparing vegetative development i.e., seedling's girth, height, rachis length, frond production, petiole size and true leaf area at 3rd, 6th, and 9th month after planting (MAP). OP seedlings able to tolerate OPDC application up to 50% mixture ratio with topsoil from transplanting up to twelve months old of biological age. Growth response in treatments up to 50% and nil fertiliser input showed comparable results ($P > 0.005$) against control in all parameters evaluated across three, six and nine months of growing period. Despite of full manuring input, OPDC application on OP seedlings has neither caused leaf phytotoxicity nor deficiency. In conclusion, OPDC can be applied directly to OP seedling as a fertiliser alternative with equal growth performance to standard method.