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**CARBON–NITROGEN DYNAMICS IN ORGANIC WASTES AMENDED –  
CRUDE OIL POLLUTED WETLAND SOIL**

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The study assessed the potentials of organic wastes for enhanced biodegradation of crude oil in sandy clay loam soil from lower Niger River wetland. The organic wastes used were poultry droppings (PD) and cassava peels (CP) and mixture of PD + CP. One week after polluting the soil with crude oil at the rate of 50 t/ha (0.06667 kg /3 kg soil), these amendments were mixed thoroughly with 3 kg of potted crude oil – polluted soil at the rates of 0 kg/3 kg soil (control), 0.06667 kg/3 kg soil and 0.1333 kg/3 kg soil, equivalent to 0 t/ha, 50 t/ha and 100 t/ha. Each amendment was replicated three times. The soils were watered to saturation once in a week, while soil samples were taken from the pots at five different times (namely, 14, 46, 76, 131 and 201 days) for the determination of the content of organic carbon, nitrogen and total hydrocarbon. The carbon/nitrogen ratio and the level of petroleum hydrocarbon were the parameters used to assess biodegradation and hence soil fertility restoration. The result showed that the application of crude oil increased the level of organic carbon (OC) and total hydrocarbon (THC) contents of the soil. The treatments, poultry droppings (PD), cassava peels (CP) and mixture of PD + CP significantly ( $P = 0.05$ ) decreased the level of OC and THC contents. When the rates of biodegradation of these treatments were compared, adopting the C:N ratio, the order of reduction in the level of OC and THC in the soil was  $PD > \text{mixture of PD + CP} > CP$ . The highest concentration of OC and THC was recorded in the control. Thus, the application of C:N ratio index seems a suitable criterion for evaluating microbial degradation of crude oil pollution in soil. The implication for agriculture and environment is discussed.

**Keywords:** Crude oil pollution, organic waste amendments, biodegradation, C/N ratio, soil fertility restoration.