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Field decomposition of pruned oil palm frond and its nutrient release pattern

The analysis of litter quality and quantity and its rate of decomposition are important for the understanding of nutrient cycling and sustainable plant productivity. Very little is known about the decomposition of oil palm fronds and its nutrient release. This study focused on senescence pruned oil palm (*Elaeis guineensis* Jacq.). Nutrient content and rate of pruned frond decomposition was investigated for 12 months, between April 2014 and April 2015. The senescence oil palm fronds from 4 plots were cut down. Only the leaflets from the middle part of the frond, without the stalk and rachis were used in this study. The litter bag technique was used to study the rate, decomposition and nutrient release of pruned palm oil fronds. One hundred twenty five grams of fresh pruned senescence leaf of oil palms were transferred into 192 nylon bags of 35 cm x 35 cm size, numbered and placed on the field (see picture). Eight bags were retrieved monthly at random from each plot over 1 year. Leaves left in the litterbags were removed and extraneous materials, such as soil, visible animals and fine roots were washed out. The samples were then dried at 65°C to a constant weight to determine the final weight of the remaining and ground for chemical analysis.

The senescence pruned oil palm leaflets decomposed linearly with time. The material decomposed very rapidly with 90–95% mass losses after 12 months (Fig. 1). Nutrient release from pruned oil palms was different for the various elements. Nutrient release followed the order  $K > Mg > Ca > P > S$ . The release of the nutrients from the pruned leaflets was relatively quick especially for K, with 70% of K released during the first month of decomposition (Fig. 2).

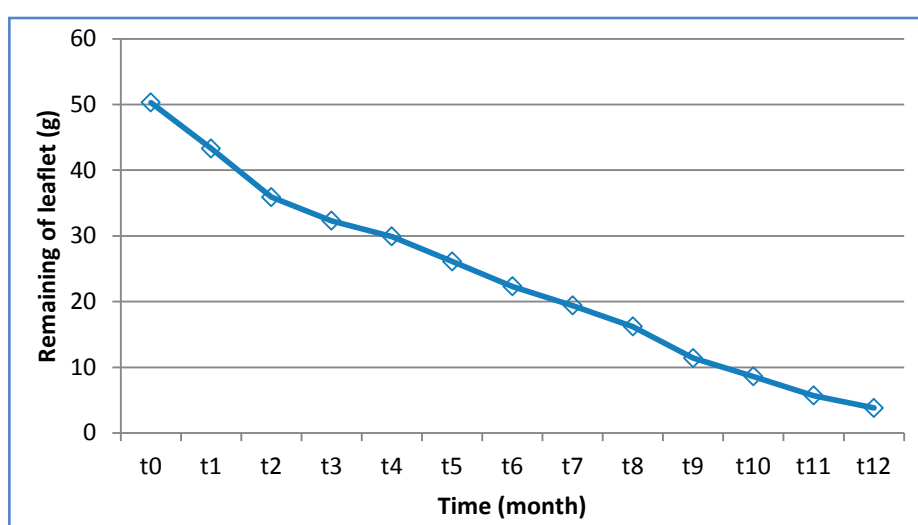


Figure 1. Remaining of the leaflets at different time of decomposition

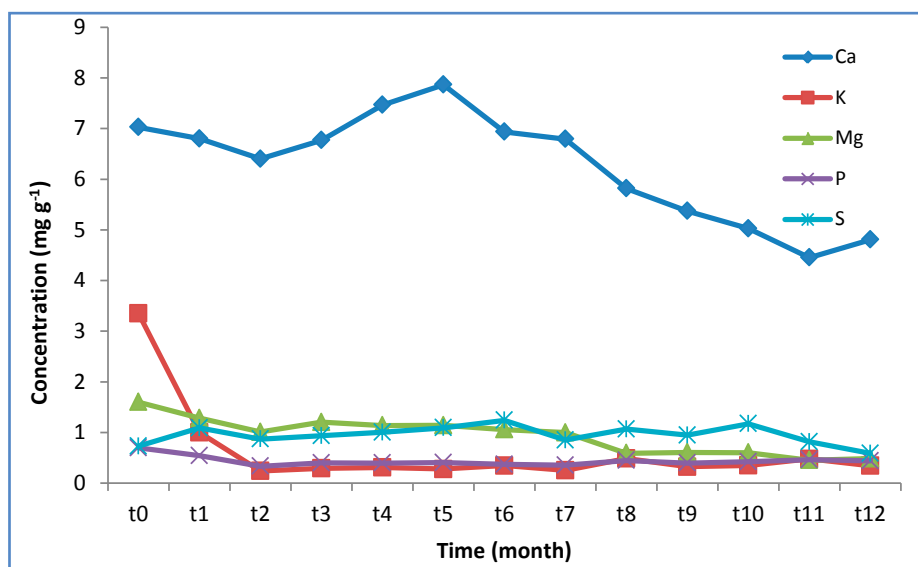


Figure 2. Remaining nutrients concentration at different time of decomposition