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## PHOSPHORUS HELPS IN IMPROVING THE VERMIDEGRADATION OF ORGANIC WASTE

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**R**esults from previous research have shown that waste materials used for composting in their original form have poor plant nutrients. Rock phosphate addition improved their decomposition as well as increased the N and P contents of vermicomposts. But, the element in RP accountable for quick waste decomposition is unknown. This study seeks to find out the element in RP causing quick waste decomposition. To achieve a C: N ratio of 30, feedstock weighing 5 kg by mixing 2.16 kg shredded waste paper and 2.84 kg cow dung with water and then enriched with (1% P) in the form of RP, triple superphosphate (TSP), phosphoric acid (PHA) and Ca in the form of  $\text{CaCl}_2$  at the level supplied by RP. After mixing, they were loaded into vermireactors and inoculated with matured earthworms at a stocking density of  $12.5 \text{ g worms kg}^{-1}$  feed for the entire 56 days. The decomposition of the mixtures was then monitored by measuring maturity parameters. Scanning electron microscopy (SEM) was used to assess morphological properties and a germination test for phyto-toxicity. Results showed that TSP caused greater and faster decomposition of the waste than RP while Ca source had the least effect. Where TSP was applied, C: N ratio of 12 was achieved within 28 days while RP, PHA and  $\text{CaCl}_2$  needed 42, 56 and more than 56 days, respectively. The results demonstrated that phosphorus and not calcium is responsible for waste decomposition. The effectiveness of added P is linked to its ability to stimulate microbial growth, reduce C: N ratio, increased humification.

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