

(96 per cent Gt, 4 per cent Hm) occurs at pH 4, whereas below pH 4 Hm again increases. The pH-dependance of Gt versus Hm formation can be explained as follows: The rate of Gt formation depends on the concentration of monomeric Fe species in solution, of which the monovalent forms are the most suitable. At pH 12 the concentration of $\text{Fe}(\text{OH})_4^-$ is high, whereas the maximum for the concentration of the $\text{Fe}(\text{OH})_2^+$ species is around pH 4. Below pH 4 higher charged species dominate which are less favourable for Gt formation. Hm formation, because it does not proceed via solution, is a competitive reaction to Gt formation. Therefore, the more Hm is favoured, the less will Gt be favoured and vice versa. The Hm maximum therefore occurs where the soluble Fe concentration is at its minimum, which coincides with the point of zero charge of ferrihydrite, i.e., at pH 7-8. This concept receives support from the Gt/Hm ratio in the Brazilian soils which appears to increase with decreasing pH in the pH range of 4-6.

A third factor is organic matter. By complexing Fe, it prevents ferrihydrite formation, and favour Gt. This again was supported by observations in soils of southern Brazil.

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Comparison of the dynamics of ferrallitic and ferruginous soils of West African Tropics. Effect of usage practice in evaluating humid and dry tropical regions

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Farming potentialities are higher under tropical than under temperate areas. However famine threatens many African regions and mechanization and fertilization are more expensive in relation to income from agriculture. This paper summarizes the studies which ORSTOM and GERDAT are leading in west Africa concerning actual evolution of two kinds of soils and the principles of water and soil conservation. The main strategy in these areas should centre around reducing water and nutrient losses through runoff and erosion and maintaining a high level of biological activity and to compensate losses by regular application of nutrients and organic matter. Details of experimental results are provided.

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