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METHODS OF PHOSPHATE FERTILIZERS EVALUATION ON TROPICAL SOILS

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Phosphate fertilizers are a key input for the maintenance of agricultural systems in tropical soils. In addition to the demand of this nutrient by crops, tropical soils are a strong drain for this nutrient, which becomes unavailable to plants due to interaction with the mineral matrix. As a consequence of these properties, various technologies in phosphate fertilizers are offered for tropical soils in order to reduce losses and increase their usage efficiency. The aim of this paper is to summarize a set of methods for evaluating the agronomic effectiveness of phosphate fertilizers and the determination of the mechanisms of action related to these technologies. Recently we have seen the introduction of several technological innovations in the fertilizer market in Brazil. However, many of these "new technologies" have no scientific support and, in the absence of well-defined protocols, analysis of the relative efficiency of these technologies is impaired. Furthermore, in several regions where agriculture is practiced intensively, it could be observed appropriate and high levels of phosphorus as a result of continued use of phosphate fertilizers in recent decades. Under these conditions, it is common to see the lack of response to fertilization by one or more crops, which has led producers and technical errors in the interpretation of the agronomic response of these new technologies which is masked by the high level of soil fertility. Through relatively simple analysis, performed in the laboratory prior to testing in the greenhouse and in the field, it is possible to determine the mechanisms of action and efficiency of new phosphate fertilizers technologies saving time and resources. The wide dissemination of these methodologies and their use in routine labs should directly impact the fertilizer industry in Brazil, quantifying the gain in efficiency of new technologies when compared to traditional fertilizers.

Key words: phosphorus, mechanisms of action, agronomic efficiency