Physiological effects of humic acids: Disturbing the plant growth?

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The use of humic substances as plant growth promoter in agriculture has grown steadily from the last decade around 10% at year, or more, whatever indicator is used (sales, treated hectares, number of users) as well as the efforts to understand how these biostimulants work. We summarized here the results of 10 years of field experimentation carried out by NUDIBA in tropical agriculture using humic substances as plant growth promoter alone or in combination with beneficial bacteria. Agronomic aspects such as doses, forms and time of application were systematically approached for some crops with emphasis on non leguminous plants as corn and sugarcane and tropical fruits. At the same time, the mechanisms of action of these growth promoters were investigated. Our results follow those found by Prof Nardi's and Garcia-Mina's research groups, including increase of nutrient efficiency use and changes in primary and secondary metabolism. More recently, we found some unusual results indicating that humic substances may disrupt normal plant functioning. The understanding of these intriguing modifications may be used to formulate new growth promoters especially targeted for abiotic stress mitigation.

Keywords: Field response, Humic acids, Diazotrophic endophytic bacteria, Ecological intensification of crops
Financial Support: CAPES, CNPq, FAPERJ, FINEP