

Title: BACTERIAL CHARACTERIZATION IN BIOFERTILIZER HORTBIO®

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Abstract:

Sustainable agriculture demand for products such as bio-fertilizers and organic fertilizers in order to be less aggressive inputs to the environment and at lower cost to the producer. Biofertilizers are biologically active compounds resulting from the fermentation of organic compounds by microorganisms. In this way, they are rich in enzymes, antibiotics, vitamins, hormones and have soil inoculum microorganisms. The aim of this study was to quantify and isolate bacteria and actinomycetes present in Hortbio® and in his inoculum EM (Effective Microorganisms). For this, colony count with serial dilutions was performed in different production times of Hortbio®_{EM-0} and of Hortbio®_{EM-40} with EM stored for 40 days in the refrigerator. Dilutions were plated on R2A medium culture for total bacteria and casein starch medium for actinomycetes, both with cyclohexamide. Dilutions with 30-300 colonies were considered to calculate colony forming units per mL (CFU/mL). The experimental design was completely randomized with time as fixed effect with three replications. The regression equations were obtained by the Statistical Analysis System program. There was significance and statistical correlation between the CFU/mL of the two different Hortbio® analyzed and in different times. The growth pattern varied to microorganisms groups of Hortbio®_{EM-0} and Hortbio®_{EM-40}. Total bacteria had higher CFU/mL in Hortbio®_{EM-0} and exponential growth after 5 days of preparation, with fall after 10 days. The same growth pattern can be seen for Hortbio®_{EM-40} with little growth after 0 days, high growth after 5 and gradual reduction up to 25 days after preparation. The colony count shows that bacteria and actinomycetes growth were similar, whereas in the Hortbio®_{EM-0} started in larger quantity than in Hortbio®_{EM-40}, however, 10 days before preparation, the micro-organisms count in Hortbio®_{EM-40} surpass the amount in CFU/mL of Hortbio®_{EM-0}. This can be explained by the fact that micro-organisms in the Hortbio®_{EM-0} have gone through an initial phase of adaptation in a new medium, as microorganisms in the Hortbio®_{EM-40} have already passed by a *lag* phase in store time in the refrigerator. They were isolated 136 total bacteria and 54 actinomycetes, being sent to sequencing.

Key-words: bacteria, actinomycetes, Effective Micro-organisms, organic fertilization.

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