



USE OF MINERAL OIL AND ALGINATE IN THE FORMULATION OF BIOINSECTICIDES BASED ON *CORDYCEPS JAVANICA*

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ABSTRACT

The fungus *Cordyceps javanica* is a promising alternative for the biological control of pests in Angola as an insecticide, especially against whiteflies and caterpillars, which significantly impact agricultural productivity. However, their susceptibility to environmental conditions compromises their effectiveness, making the use of protective techniques essential. In this sense, this study, a pioneer in the country, aimed to characterize proprietary formulations based on *C. javanica* in the form of emulsifiable dispersion. Fungal inoculum (Cj) at 2.5×10^8 CFU/mL was used together with mineral oil (om), anionic surfactant 1.6% (w/v) (ta), milk powder 16.6% (w/v) (lp), water (wa) and alginate 0.5% (w/v) (alg) in the following emulsifiable dispersions: 1 - (Cj/om:wa (50:50 (v/v)):ta:lp); 2 - (Cj/om:wa (50:50 (v/v)):ta:lp:alg); 3 - (Cj/om:wa (16,6:73,4 (v/v)):ta:lp); 4 - (Cj/om:wa (16,6:73,4 (v/v)):ta:lp:alg) and a commercial emulsifiable dispersion as control. The stability of the formulations was evaluated by kinetics and centrifugation, in addition to the measurement of pH and flocculation speed in four periods (0, 10, 20 and 30 days) at 30°C, in a completely randomized design, with three replications per treatment. To evaluate the effect of treatment and time on treatment stability, an analysis of variance was performed using a 2x4 double factorial, together with Tukey's test. In addition, to compare the performance of the formulations with the commercial control, a principal component analysis was performed using only the 30-day time of the formulas. All analyses were performed using the R software, $p < 0.05$. The results indicated that the stability of the emulsions was significantly impacted by the type and time of storage. The oil:water ratio (50:50) with alginate ensured, in the formulation, characteristics more grouped to the commercial control. The low proportion of oil compromised the stability, while the maintenance of the pH between 6 and 7 favored compatibility with agricultural applications. These results highlight the importance of formulation to ensure an efficient and stable bioinsecticide.

Keywords: Bioinputs. Entomopathogenic fungus. Emulsifiable dispersion. Sustainable agriculture.

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