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IDENTIFICATION OF A COMPATIBLE BIOCIDES AS AN IN-CAN PRESERVATIVE TO INCREASE THE SHELF LIFE OF ALGAE FERT SOLID K+ LIQUID FERTILIZER

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Algae Fert Solid K+ is an extract of *Ascophyllum nodosum*: a seaweed grown in Mediterranean sea. Commercial product of this extract comes to the market as black solid flakes which are highly soluble in water and that solution can be used as a foliar fertilizer, as it contains plant growth regulators and plant nutrients. After preparing liquid fertilizer it is readily contaminated with microbes as it contains high nutrient content. This microbial contamination reduces the shelf life of this fertilizer. The aim of the present study was to determine effective biocides against microbial contaminants in order to increase the shelf life of the fertilizer. Rate of microbial contamination was evaluated incorporating different concentrations of 1,2-Benzisothiazolin-3-one and NaOH mixture (PROXEL GXL) and potassium sorbate into the fertilizer and named as treated fertilizer. Microbial growth of the treated fertilizer was assessed using pour plate method. Optical density and pH of the treated fertilizer were monitored weekly. Effect of water source on microbial growth was tested dissolving fertilizer flakes in sterile distilled water and well water.

Six species of bacteria; Four gram-positive and two gram-negative, and two *Aspergillus* spp. were observed. 0.5g/L PROXEL GXL and 3g/L potassium sorbate were able to inhibit the microbial growth. pH of the fertilizer fluctuated with the time whereas treated fertilizer exhibited relatively low rate. Optical density was higher in untreated fertilizer than treated fertilizer. Number of colony forming units of bacteria was higher in liquid fertilizer with well water than sterile water. Results reveal that PROXEL GXL and potassium sorbate are potential biocides which can be recommended as preservative to increase the shelf life of Algae Fert Solid K+ fertilizer.

Keywords: Fertilizer, microbial growth, biocide, PROXEL GXL, potassium sorbate