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“CLEANER PRODUCTION INITIATIVES AND CHALLENGES FOR A SUSTAINABLE WORLD”

Clean Technologies (Bio-Fertilizers) Alternative to Urea for Production of Basil in and Out of Season

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Abstract

The growth in the use of pesticides and fertilizers which cause pollution of surface and belowground water, soil, air, flora, fauna and produce negative effects on the health of the population, has increased interest in clean technologies like bio-fertilizers. In the context of sustainable agriculture, the objective of this research is assess the effects of different bio-fertilizers (vermicompost) and urea in the production of basil (*Ocimum basilicum* L.) variety Catamarca INTA (wide leaf) in and out of season. The seeds were sown in the greenhouse in March (out of season) and in October (in season). The treatments used were: vermicompost from bovine ruminal content 50%:50% soil (LCR), vermicompost from rabbit manure 50%:50% soil (LEC), urea 100 kg/ha and the soil (control). Completely randomized design was applied with three repetitions and thirty plants per treatment. The variables were analyzed by ANOVA and the mean comparison was performed by Fisher LSD ($p < 0.05$). The results indicate that the variables are significantly increased in season: the number of leaves and branches are greater and is double the height and aerial fresh weight, of the root and the total fresh weight, and aerial dry weight are fourfold greater while the total dry weight, of the root and leaf area produced three times the amount produced out of season. The time-substrate interaction was highly significant for height. In both seasons it can be observed the highly beneficial effects of vermicompost than the ones achieved with urea and control, but urea station has a more favorable effect than the control. In season the LEC performs better in terms of the number and area of leaves and chlorophyll content compared to LCR. In both periods, the use of vermicompost produces better results due to its effects on all production variables. These clean technologies are a sustainable alternative to the application of urea in the production of basil both in and out of season.

Keywords: clean technology, biofertilizers, vermicompost, basil, production.

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