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Abstract

This study investigated the synergistic effect of compost tea, micronutrients and antioxidants on downy mildew control of sweet basil in *in vivo* conditions. Compost tea was used as a soil additive, while other treatments were used as foliar sprays. The treatments were applied in the greenhouse three times, 15 days interval, at two rates as follows: compost tea (15 and 30 mL/pot), micronutrients (1 and 2 mg/L) and antioxidants (2 and 4 g/L). The treatments were used in the field three times, distributed over three cuts, at a rate of 1.5 L/plot of compost tea, 2 mg/L of micronutrients, and 4 g/L of antioxidants. The results showed that all treatments used in the greenhouse led to a significant decrease in sweet basil downy mildew (SBDM) compared to the control. Concentration B was more efficient in reducing disease than concentration A. The most effective treatments were copper hydroxide, compost tea/SA + Cu, compost tea/SA + Zn and compost tea/AsA + Cu. The corresponding reduction values were 79.4, 67.2, 55.8 and 48%, respectively, in disease incidence, and 85.1, 78.9, 74.5 and 71.1%, respectively, in disease severity. Similar results were obtained in the field during two successive seasons. Reduction in SBDM severity due to the synergistic effect of treatments through improvement of growth and yield features has been favorably expressed. Along with a significant increase in the content of the essential oil and its active components, the activities of defense-related enzymes (*i.e.* peroxidase and catalase), and photosynthetic pigments notably elevated.

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