THE EFFECTS OF SUPER ABSORBENT POLYMERS (SAPs) ON GROWTH OF BLACK PEPPER (*Piper nigrum* L.) IN NURSARY MANAGEMENT UNDER VARIOUS IRRIGATION REGIMES

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Black pepper is one of the most economically important export crops in Sri Lanka. Local black pepper owned high demand in the export market due to its high piperine content. But drought tolerant ability of local black pepper is lower than other exotic types. Therefore, drought stress is one of the most adverse limitations of local black pepper production in Dry and Intermediate zones of Sri Lanka. By applying Super Absorbent Polymers better results can be achieved by means of moisture conservation. A study was undertaken to examine the effect of different irrigation intervals and different weights of super absorbent polymer to find out the best treatment combination on black pepper plants under nursery management. The experiment was conducted at the Betel Research Station, Narammala. GK-49 variety of black pepper and Zeba, the super absorbent polymer, were employed in this study. An experiment was carried out in factorial layout based on Completely Randomized Design (CRD) with three replications. The factors were; irrigation interval with three levels as 4 days, 8 days, 10 days (T1 to T3) and weights of Zeba with four rates as no Zeba , 1 g of Zeba , 1.5 g of Zeba and 2 g of Zeba (L1 to L4). Before planting Zeba was added to the media and two nodal cuttings of black pepper we replanted. Plant growth parameters were measured in 2 week intervals and all the data were analysed using SAS package. Results of statistical analysis showed that the rate of application of Zeba, irrigation levels and their interaction had a significant effect ($P<0.0001$) on plant growth parameters. Plant parameters decreased with the decreasing amount of Zeba and increasing irrigation interval. In this study 1.5 g of Zeba with 4 day irrigation interval (L3T1), 2 g of Zeba with 4 day irrigation interval (L4T1), 2 g of Zeba with 8 day irrigation interval (L4T2) treatments were the better treatments. However, when considering the cost effectiveness 2 g of Zeba with 8 day irrigation interval (L4T2) treatment can be considered as the best treatment for increasing plant performances and decreasing water stress conditions for the plant.

Keywords**:** Irrigation, Pepper, Super Absorbent Polymer, Water stress, Plant parameters

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