EFFECT OF MOISTURE ABSORBENT HYDRO POLYMER (ZEBA) ON GROWTH OF COCONUT (*Cocos nucifera* L.) SEEDLINGS IN THE COCONUT NURSERY

BY

P. GAYASHINI KELUM PERERA

FACULTY OF AGRICULTURE

EASTERN UNIVERSITY

SRI LANKA

2017

ABSTRACT

Coconut palm is one of the most important plantation crop worldwide. Success of coconut plantation establishment starts with the production of good quality planting materials. Selecting the best planting materials before field planting assures higher productivity. Cost of production of coconut seedling is very high in coconut nurseries, because coir dust is becoming a scarce resource even within the Coconut Triangle. Therefore, the use of coir dust in the potting mixture might not be a feasible proposition in the near future. Therefore it was considered imperative to test the suitability of other options available locally. Moisture absorbent hydro polymer (Zeba) is one the best alternative to the coir dust used in potting media of coconut seedlings. Therefore an experiment was conducted to investigate the effect of moisture absorbent hydro polymer on growth of coconut seedlings and water retention characteristics of the soil.

The experiment was carried out under a plant house and laboratory of the Agronomy Division, Coconut Research Institute of Sri Lanka (CRI), Lunuwila. The experiment was laid out in the Complete Randomized Design (CRD) with twelve replicates.

Different potting mixtures were used as treatments such as T_1 – top soil: organic manure: coir dust, 1:1:1, T_2 – top soil: organic manure: moisture absorbent compound, 1:1:1, T_3 – top soil: moisture absorbent compound, 1:1, T_4 – top soil: coir dust, 1:1. Measurements were taken and data were statistically analyzed.

There was no significant difference ($P>0.05$) among tested treatments in seedling girth and root volume. The results revealed that there were significant ($P<0.05$) differences among the treatments on seedling height, number of fully opened leaves, leaf area, dry

leaf area, dry shoot weight, dry root weight, soil moisture content and soil water retention capacity. Plant growth rate was increased in T_1.

According to the chi square values, there was significant ($P<0.05$) differences among the treatments on number of fully opened leaves at 10^{th} and 12^{th} weeks after planting. T_1 exhibited the highest seedling height, number of fully opened leaves, leaf area, dry shoot weight, dry root weight. Same as the T_1 (top soil, coir dust and organic manure) potting mixture, the T_3 (top soil and moisture absorbent) potting mixture also caused to the considerable increase in plant height, number of fully opened leaves, leaf area, dry shoot weight, dry root weight of coconut seedlings while T_3 exhibited highest soil moisture content and water retention capacity also. Therefore application of moisture absorbent hydro polymer could be used to get maximum growth and soil moisture characteristics of coconut seedlings. Then cost of production of coconut seedlings may be reduced.

Keywords: Coconut, plantation, planting material, coir dust, moisture absorbent hydro polymer

TABLE OF CONTENT