OPTIMUM OVERLAPPING PERCENT AGE OF SPRINKLERS FOR RE ONION *(Allium cepa)* CULTIVATION IN NON CALCIC BROWN SOIL

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Sprinkler irrigation is a popular method among the farmers in low country dry zone in Sri Lanka. With the water scarcity problems in the dry zone, farmers need to work with higher water use efficiency to cultivate more lands with existing water resources. A field study was conducted at Regional Agricultural Research and Development Center (RARDC), Aralaganwila, during 2013 *Yala* season to identify optimum overlapping percentage of s prinklers suitable for red onion cultivation in non-calcic brown (NCB) soil. Experimental design was completely randomized design with four treatments as 50%, 40%, 30% and 20% overlapping and three replicates. During the

experiment, sprinkler irrigation system was operated with pressure of 2×10^{5} Pa. Soil Moisture retentions in different depths as 0-15 cm and 15-30 cm under different overlapping percentages were studied. Application efficiency and uniformity in water application under different overlapping percentages were calculated. Growth parameters such as, plant height, number of bulbs in a cluster were measured under different treatments. Results revealed that, overlapping percentages of 50%, 40% and 30% recorded significantly higher moisture retention in soil compared to 20% overlapping percentage. Plant height showed insignificant variations among treatments. Number of Bulbs is significantly higher in 30% overlapping compared to other overlapping percentages. Overlapping percentages of 50%, 40% and 30% recorded higher uniformity coefficient and application efficiency compared to 20%

overlapping percentage. A verage wind speed was 3.3 ms^{-1} during the study period. Results indicated that, 30% is the optimum overlapping percentage for red onion cultivation in NCB soil under the average wind speed of 3.3 ms^{-1}. However, further studies on different overlapping percentages are suggested to confirm these results since this study encountered numerous problems due to seepage, rainfall and wind.

Key words: Application ef ficiency, Moisture retention, Optimum overlappin percentage, Sprinkler irrigation, Uniformity coef ficient