

IDENTIFICATION OF DROUGHT PATTERNS IN SELECTED TEA ESTATES IN SRI LANKA

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ABSTRACT

Drought is a main reason for the reduction of the tea productivity. Irrigation is important to mitigate the effect of drought for sustainable production. For it identifying irrigation requiring months and periods are important. So, a research was conducted for the identification of drought patterns in tea estates, especially close to Dry Zone of Sri Lanka. Roeberry, Madampe and St. Joachim estates were selected from IM1a, WM1b and WL1a Agro Ecological Regions and the rainfall data were collected from those estates in 25, 10 and 21 years respectively. Soil water balance tables and graphs were prepared using 'Instat+ v3.36.msi' Climate Analyzing Software for each year. Soil water contents and soil water deficits for each day were also calculated. Severely droughts affected months which need irrigation were identified for each estate. The irrigation costs for each identified drought periods were calculated to evaluate the economic feasibility of using irrigation. The results obtained for Roeberry Estate, reveal that June, July, August and September months are the most drought vulnerable months and November, December and January months are the least drought vulnerable months which receives rainfall mainly from North – East Monsoon. 1995, 1983, 1992, and 1999 were the most drought affected years and 1996, 2004, 1989 and 1988 were the least drought affected years. The results obtained for Madampe Estate, reveal that May, January, February, August months are the most drought vulnerable months and April and June months are the least drought vulnerable months which receives rainfall mainly from First Inter – Monsoon and South – West Monsoon. 2012 and 2008 were the most drought affected years and 2004 and 2010 were the least drought affected years. The results obtained for St. Joachim Estate reveal that January, February, March and December months are the most drought vulnerable months and June and October months are the least drought vulnerable months which receives rainfall mainly from South – West Monsoon and Second Inter – Monsoon. 1992, 1989 and 2009 were the most drought affected years and 1986, 1991, 2000 and 2003 were the least drought affected years. Specially, in the highest drought affecting months and periods, irrigation is important to mitigate the effect of drought for sustainable tea production.

Key Words: - drought, rainfall, soil water deficit, irrigation, productivity