

EFFECT OF SUPPLEMENTARY IRRIGATION ON SURVIVAL  
AND GROWTH OF YOUNG TEA AND YIELD OF MATURE TEA

BY

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ABSTRACT

The effect of supplementary trickle irrigation on the survival and growth of young tea and yield of mature tea was studied. Survival of young tea under trickle irrigation was 100% whereas in the case of unirrigated tea survival was 90%. Under trickle irrigation plant survival was not affected by (i) frequency ie. daily, weekly or two weekly (ii) method of application ie. on the surface or sub-surface. Plant growth at the end of the dry period, as measured in terms of shoot weight, Leaf Area Index (LAI) and plant height were higher under daily surface water application and least under no irrigation. However, rooting depth was higher under sub-surface water application than under surface application. Residual effect of irrigation as measured in terms of tipping weight was significantly higher ( $P = 0.05$ ) under daily surface irrigation. The evapotranspiration was highest under surface water application and lowest under no irrigation. The amount of water saved in evapotranspiration by plants under sub-surface trickle irrigation varied from 0.3 mm to 1.1 mm/day when compared to that under surface trickle irrigation during the dry period under consideration.

Trickle irrigation increased the yield of mature tea by (i) 55% to 80% during 1982 dry period (March to April) (ii) 65% to 91% during 1983 dry period (February to April) and (iii) 9% to 15% for the period between February 1982 to January 1983 (annual yield) over the unirrigated tea. There was no significant difference in yield between the frequencies of irrigation ie. plants that were continuously kept at field capacity or weekly or

two weekly irrigated. Though there is no significant difference ( $P = 0.05$ ) in quality and value of made tea between trickle irrigation and no irrigation, the quality and value of the irrigated tea was numerically higher than that of unirrigated tea. Evapotranspiration rate was higher under the tea that was continuously kept at field capacity ie. 8.5 mm/day in 1982 dry period and 9.6 mm/day in 1983 dry period and lowest under the unirrigated tea ie. 2.0 mm/day in 1982 dry period and 1.7 mm/day in 1983 dry period. Leaf diffusion resistance of the irrigated plants were lower than that of the unirrigated plants. Also, leaf water potential figure was significantly higher ( $P = 0.05$ ) ie. less negative (-5 to -15 Bars) for irrigated plants when compared to that of unirrigated plants (-10.4 to -19.5 Bar) throughout the day.

Incremental benefit/cost analysis based on the results of the experiment for a hectare of clonal tea showed that two weekly trickle irrigation had the highest value ie. 7.8 for economic analysis and 4.4 for financial analysis assuming that water is freely available closer to the tea land and no expenses are incurred in transporting water.

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