Yield Response and Quality Traits of Tobacco as Affected by Different Irrigation Regimes

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Tobacco (*Nicotiana tabacum*) is an annual cash crop widely cultivated over the world. This study was aimed to investigate the growth, leaf yield and quality characteristics of tobacco cultivated under different irrigation levels. A Randomized Complete Block Design with 3 replicates was laid in a farmer field in Galewela, Dambulla. Furrow irrigation (FI), alternative furrow irrigation (AFI) and bed irrigation (BI) were used as different irrigation regimes in the study. A popular hybrid variety among farmers, Lk-01 was used for cultivation. Water input under different irrigation regimes were measured using a water pump and a water meter. Rainfall during the experimental period was also recorded. Measurements were taken at grand growth stage and leaf maturity stage. Biomass accumulation of all plant organs, leaf number and area, nitrogen (N), phosphorus (P), and potassium (K) uptake and use efficiencies, water productivity and leaf quality parameters were measured. There were no significant variations of measured parameters among three irrigation levels in grand growth stage. However, at leaf maturity stage, FI showed the greater biomass accumulation in all plant organs, leaf area and leaf number, N/P-use efficiencies and water use efficiency (WUE) in biomass formation. The WUE recorded under FI was 39% higher than that in bed irrigation. FI could also contribute more to enhance the final product quality than other two irrigation regimes. For example, leaf chlorine (Cl) content under FI stands closer to recommended level (1%) compared to AFI and BI. Therefore, adoption of FI could have more yield advantage and economic benefits for the growers.

Keywords: Irrigation, Leaf yield, Nutrient accumulation, Tobacco, Water use efficiency

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