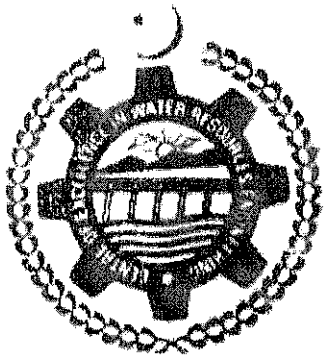
THESIS

EVALUATION OF WATER APPLICATION OF A SPRINKLER IRRIGATION SYSTEM WITH SPECIAL REFERENCE TO TOPOGRAPHY AND WATER APPLICATION RATES



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ABSTRACT

The present study was conducted to evaluate water application of a pop-up sprinkler irrigation system installed in the Royal Palm Golf and Country Club Lahore, Pakistan. Field experiments were conducted under different operating pressures to find the optimum operating pressure. This experimental work was conducted under different atmospheric conditions across 24 hours to access the best timing for the irrigation to minimize losses of water and maximize the irrigation efficiencies. The best timing for the irrigation was observed early morning hours or late night hours because in these timings the humidity is high and temperatures are low. The maximum application efficiency was observed 84.63 percent while maximum distribution uniformity of the system was found 56.9 percent at 60.5 psi pressure. Drift and evaporation losses ranged from 15.4 to 22 percent in different experiments.

Infiltration tests were also conducted to know the infiltration characteristics of the soil along the slope of the mounds at top, middle and bottom. High infiltration rates were found at top of the mound causing rapid water movement resulting in dryness of the grass at the top of mound and dampness on the lower spots. Surface water runoff occurred after 14 minutes at foot of the mound due to low infiltration rate as compared to the application rate of 3.16 cm/hr.