



Managing soil moisture content by systematic injection of wetting agents

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One of the most important limiting factor in successfully growing crops, managing turfgrasses for landscapes and golf courses in arid and semi-arid regions of the world is the availability of enough quantities of irrigation water. Distribution uniformity and proper scheduling of the irrigation system are critical in managing soil moisture content. Cultural management practices like core aeration, top dressing and the use of wetting agents are tools which can be used to maintain an optimum moisture level in the rootzone. Systematic injection of wetting agents through the irrigation system is an efficient way of optimizing water usage and controlling soil moisture content. The objective of this research project was to evaluate the efficacy of different injectible wetting agents in maintaining higher levels of moisture content in the soils compared to the control. The experiments were conducted at the California State Polytechnic University, Pomona during the summer of 2003 and 2004. Twenty-four plots (3m by 3m) were laid out in a split-plot design, with three replicates. Irrigation-water quality (potable or recycled) was the primary factor while three different surfactants (Irrigaid at 1.753 L ha⁻¹ every two weeks, Dispatch and ACA 1897 at 0.877 L ha⁻¹ every week) were the secondary factors. Bermudagrass (GN-1) was maintained under golf course fairway management conditions. Volumetric moisture content was monitored throughout the experiment with time domain reflectometry (TDR) and time domain transmission (TDT) methods. The plots were irrigated at 100% of the reference cumulative monthly evapotranspiration (ET_o) demand in May and was reduced to 70% ET_o in June, followed by a further reduction to 30% ET_o in July and finally 10% ET_o in August. Overall all the wetting agents treatments helped in retaining higher moisture levels in the soil compared to the control. The treatment effect was more

pronounced under moisture stress (30% and 10% of ETo). The Dispatch treatment resulted in maintaining higher soil moisture content in the rootzone compared to the other treatments.