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Viability of Sub-Surface Drip Irrigation in Agronomic and Vegetable Crops Production

Authors : Ali Montazar

Abstract : This study aims to assess the viability of sub-surface drip irrigation (SDI) using several ongoing and conducted researches in the low desert region of California. The experiments were carried out in the University of California Desert Research and Extension Center (UC DREC) and ten commercial fields at alfalfa, sugar beets, dehydrated onions, and spinach crops. The results demonstrated greater yields, actual crop water consumption, and water productivity of SDI as compared with conventional irrigation practices (border, furrow, and sprinkler irrigation) with an average increase of 21%, 7%, and 15%, respectively. The severity of plant disease, particularly root rot in sugar beet, and downy mildew in onions and spinach, were significantly lower in SDI than furrow and sprinkler irrigation (an average of 3-5 times). While utilizing this irrigation technology may have ability to achieve higher yields, conserve water, improve the efficiency of water and nutrient use, and manage food safety risks and plant disease, further work is required to better understand the impact of management practices and strategies on the viability of SDI application, and maintain its profitability in various agricultural production systems as water, labor costs, and environmental concerns increase.

Keywords : alfalfa, onions, spinach, sugar beets, subsurface drip irrigation
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