ABSTRACT

OPTIMIZING NITROGEN RATES FOR ORGANIC VEGETABLES SUBJECTED TO AIRJECTION® IRRIGATION

The impact of injecting air into the subsurface drip irrigation system referred to as AirJection® Irrigation has shown promising results in conventional farming systems. This study examined the influence of AirJection® Irrigation and four rates of nitrogen (N) fertilizer on the growth and yield of organically grown bell peppers (*Capisum annum* cv. Galaxy) and broccoli (*Brassica oleracea* cv. Marathon). The experiment was a split plot design comprised of eight beds representing four replications of air-injected and no-air treatments (control) as the main treatment, and N rates as subplot treatment. Four rates of nitrogen ranging from 34, 67, 100, and 134 kg/ha were applied as commercially available organic feather meal (12-0-0). AirJection® Irrigation resulted in optimum yield increases of bell pepper and broccoli at N rate of 67 kg/ha. In general, AirJection® Irrigation also positively affected photosynthetic and soil respiration rates, stomatal conductance, leaf scale water use efficiency, plant tissue nitrate concentrations, and shoot and root biomass.

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May 2008