

عنوان مقاله:

Pricing irrigation water under separate and simultaneous drought, salinity and nitrogen stresses

محل انتشار:

کنگره بین المللی مهندسی کشاورزی و صنایع وابسته (سال: 1397)

تعداد صفحات اصل مقاله: 11

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خلاصه مقاله:

The accurate valuation of water is of special policy interest worldwide. In most countries, irrigation of agricultural crops accounts for a large portion of water withdrawals. On the other hand, Salinity of soil and water is the most important challenge in most agricultural sectors in arid and semiarid regions. This limiting growth factor has forced the farmers to apply chemical fertilizers in order to increase crop yield. In this regard, the challenge in calculating an accurate economic value to water in crop production is the complexity of modeling all the effective factors. In order to assess the combined effect of irrigation water amount, salinity and nitrogen application on irrigation water economic value, the green pepper (*Capsicum Annum*) was cultivated under four irrigation, three salinity and three nitrogen stress treatments. The crop yield was then harvested and its dry matter was obtained at the end of the cultivation period. The crop-water-salinity-nitrogen production functions was then derived and used to value irrigation water. The results showed that water and salinity stresses are more efficient on crop yield and water value than nitrogen stress. In addition, derived crop production function indicted that there was a linear relation between yield and three stress factors, which means a linear relation between water value and the inputs. This linear relation was changed by reducing soil evaporation in a way that salinity and nitrogen stresses could be disregarded. In this regard, reducing soil water evaporation can decrease the effect of salinity and nitrogen stresses and increase water productivity. The results emphasized that using production functions can improve the accuracy of water valuation by considering more variables. In addition, the results showed that water value does not have to be a constant value and it can change during the growth period, which is more economical than a solid value.

کلمات کلیدی:

Green pepper, deficit irrigation, nitrogen fertilizer, water quality, crop production function, environmental stresses

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