

## عنوان مقاله:

Evaluation of an analytical method for relationship between soil hydraulic diffusivity and sorptivity under zeolite application

## محل انتشار:

دوفصلنامه تحقیقات کشاورزی ایران، دوره 39، شماره 2 (سال: 1400)

تعداد صفحات اصل مقاله: 8

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## خلاصه مقاله:

ABSTRACT-Zeolite is used to improve the soil hydraulic properties, i.e., soil hydraulic diffusivity (D) and sorptivity (S) that should be determined. A simple method that relates S to D was evaluated by horizontal water absorption experiment in sandy loam, loam and silty clay soils and zeolite application rates of 0, 4, 8, and 12 g kg<sup>-1</sup> soil. Results indicated that zeolite application was not effective on the a and b values of hydraulic diffusivity function ( $D=a\exp(b\theta)$ ,  $\theta$  is the soil water content, cm<sup>3</sup> cm<sup>-3</sup>), while maximum value of a and b in sandy loam and silty clay soils, respectively occurred by zeolite application of 8 g kg<sup>-1</sup> soil. The values of a and b for loam soil were not influenced by zeolite application rates. Sorptivity for sandy loam soil was reduced by zeolite application rate, while minimum value of S for loam and silty clay soils occurred at zeolite application rate of 8 g kg<sup>-1</sup> soil. It is indicated that indirect determination of S for different soil textures and zeolite application rates were closely similar to the direct determination of S. Therefore, by determination of S value by simple horizontal absorption test at two different initial soil water contents or two different absorption suction heads in tension infiltrometer the values of Ds and  $\alpha$  for hydraulic diffusivity function ( $D=D_s\theta^\alpha$ ) can be estimated.

## کلمات کلیدی:

Hydraulic diffusivity, Sorptivity, Soil hydraulic parameters, Soil conditioner, Zeolite

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