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Evaluate Related Traits to Water Use Efficiency (WUE) Of Sesame (*Sesamum indicum* L.), Maize (*Zea mays* L.) and Common Bean (*Phaseolus vulgaris* L.) by Using Factor Analysis

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Abstract

In order to evaluate effects of different irrigation levels and humic acid foliar application and determining factors affecting water use efficiencis of sesame, maize and common bean, a split plots experiment based on RCBD design with three replications was conducted during 2014-15 growing season, at Ferdowsi University of Mashhad. Foliar pplication and non-application of humic acid and irrigation levels (50 and 100% of water requirement) assigned to main and sub plots, respectively. Factor analysis results showed that in sesame, variables of seed yield, biological yield, seed weight per plant, plant height, leaf area index, crop growth rate, soil phosphorous and water use efficiency were assigned in first factor and variables of soil nitrogen, soil pH and EC were assigned in second factor. In maize, seed yield was assigned in the same group with variables of biological yield, leaf area index, crop growth rate, soil phosphorous, EC and pH and water use efficiency and in bean, with variables of seed yield and and water use efficeincy. In general, the research results revealed that identifying the effective variables in each factor and those logical nominations according to ecophysiological knowledge can predispose direct management of effective variables regarded to associated factor aimed to water use efficiency improvement.

Key words

Ecophysiological Knowledge, Factor Analysis, Humic Acid, Leaf Area Index, Water Requirement.

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