Effect of Irrigation Interval, N Fertilizer Rate and Plant Density on Yield and Chemical Composition of Fenugreek (Trigonella foenum-graecum L.)

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Abstract

In order to study the effect of irrigation interval, N fertilization and plant density on yield and yield components of fenugreek, a split-split-plot experiment was conducted in Darmian, Iran in spring 2010. The experiment was conducted in randomized complete block design with three replications. The main plots were subjected to different irrigation intervals of 5 and 10 days. The sub-plots were treated with N fertilization at three different rates of 0, 75 and 150 kg N ha\(^{-1}\) from urea source and the sub-sub-plots were assigned with three varied plant density levels of 22, 33 and 66 plants m\(^{-2}\) respectively. Analysis of variance showed that the effect of irrigation interval on all measured traits was not significant. Also application of 150 kg N ha\(^{-1}\) had 33.9 and 66.1% higher pod number per plant, 37.5 and 68.1% higher pod number per m\(^{2}\), 31.7 and 67.1% higher seed yield, 31.7 and 65.9% higher single-plant seed yield, 31.1 and 68.9% higher single-plant biomass yield and 30.6 and 67.8% higher biological yield than the application of 75 and 0 kg N ha\(^{-1}\), respectively. Moreover, the results showed that increase in population from 22 to 33 plants m\(^{-2}\) decreased single-plant seed and biomass yields by 32.1 and 33.6%, respectively. Conclusively, considering the results of the present study and the importance of water saving, it is recommended to use an irrigation interval of 10 days with the application of 150 kg N ha\(^{-1}\) and a population of 66 plants m\(^{-2}\) for the cultivation of fenugreek in Darmian, Iran.

Key words: Trigonella foenum-graecum L., Irrigation interval, Population, Yield.