

## Abstract

An experiment was conducted to examine the effects of different tillage systems and fertilization on quantitative and qualitative characteristics of cumin as split randomized complete block design with three replicates in Delfan during 2016 and 2017. Main plot included three different tillage system; 1- conventional (mold board plough, chisel plough and disk), 2- minimum tillage (chisel plough and disk) and 3- zero tillage (disk) and subplots comprised eight different combinations of organic and chemical fertilizer; 1- Control, i.e. without any dose of manure and fertilizers, 2- Chemical Fertilizer (N.P.K): (N) 2-25 kg.ha<sup>-1</sup>, (P) 50 kg.ha<sup>-1</sup> and (K) 75 kg.ha<sup>-1</sup>, 3- Vermicompost 10 ton.ha<sup>-1</sup>, 4- Cow manure 20 ton.ha<sup>-1</sup>, 5- Municipal Solid Waste Compost 20 ton.ha<sup>-1</sup>, 6- 50% N.P.K + 50% Vermicompost, 7- 50% N.P.K + 50% Cow Manure and 8- 50% N.P.K + 50% Compost. The results showed that the effects of different tillage systems and types of fertilizers on quantity and quality characters of cumin (*Cuminum cyminum* L.) on some of the studied characteristics was significant. Mean comparison showed highest umbel number per plant, grain number per plant and Weight of 1000 grains attained in minimum tillage and application of 10 ton vermicompost. In addition, the greatest grain number per umbel, biological yield, grain yield, plant height, harvest index and essential oil yield achieved in minimum tillage and application of cow manure. The results suggested that to improve the quantitative and qualitative characteristics of cumin application of cow manure and vermicompost along with minimum tillage is recommended.

**Keywords:** Ecological agriculture, Essential oil, Medicinal plants, Municipal solid waste compost, Zero tillage



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