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Effect of Nitrogen and Manure Application on Grain Yield and Essential Oil Content of Fennel (Foeniculum vulgare)

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Abstract

In investigate the effects of different application rates of nitrogen and manure on grain yield and essential oil content of fennel (Foeniculum vulgare Mill.). The experiment was arranged as a factorial in a randomised complete block design with three replicates. There were four nitrogen fertiliser levels as urea (0, 60, 120 and 180 kg ha^{-1} N) and four manure levels (0, 6, 12, and 18 ton ha^{-1}). Results showed that the effects of different levels of nitrogen fertiliser and manure and also on the interaction of the two factors affected the fennel traits. The highest values for the traits were plant height with 110.51 cm and biological yield of 2827.03 kg ha^{-1} from 180 kg nitrogen fertiliser + 18 tons manure per hectare, which was 69.9 and 57.9 % were superior. The highest number of lateral stems and number of seeds per umbrella was obtained in the number of seeds 6.73 and 130.22, respectively, at a level of 180 kg N ha^{-1}, respectively, which was 26.6 and 14.4 %, respectively Percentage were superior. The highest number of Umbrellas per plant, seed weight per plant and grain yield were 30.77, 15.92 grams, and 42.94 kg, respectively, from 120 kg nitrogen fertiliser + 18 tons manure per hectare, 43.4, 161.4, 49 % showed superiority to control treatment. The highest number of umbrellas per umbrella and 1000 grain weight was obtained using 120 kg N / ha of 15.55 and 52.3 gram, respectively, which had a superiority of 31.1 and 26.8 %, respectively, than non-fertiliser treatment. The highest number of seeds per Umbrella (9.73) at fertiliser level was 12 tons manure per hectare, which was 1.3 percent higher than non-fertiliser treatment. The highest percentage of essential oil and essential oil yield were obtained in combination treatment of 60 kg nitrogen fertiliser + 18 tons manure per hectare, respectively, 1.946 % and 17.15 kg ha^{-1} respectively, which was 16.8 % and 54.6 %, respectively Increased. According to the results, it seems that application of manure can be an appropriate alternative to reduce the use of nitrogen fertiliser in the cultivation of fennel.

Keywords: Fertiliser, Grain yield, Medicinal palant, Organic matter

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