



Research Paper

Article history :

Received : 07.09.2013

Revised : 09.11.2013

Accepted : 26.11.2013

Effect of different levels of drip irrigation along with various fertigation levels on growth, yield and water use efficiency in fennel (*Foeniculum vulgare* Mill.)

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ABSTRACT : A field experiment was conducted to study the effect of different levels of drip irrigation along with various fertigation levels in fennel (*Foeniculum vulgare* Mill.) during *Rabi* season of 2010-11 at Swami Keshwanand Rajasthan Agricultural University, Bikaner. The experiment consisted of twenty one treatment combinations comprised of seven drip irrigation treatments (1 00: 100: 100 per cent ETc, 80:80:80 per cent ETc, 60:60:60 per cent ETc, 40:40:40 per cent ETc, 40:60:60 per cent ETc, 40:80:80 per cent ETc and 40: 100: 100 per cent ETc at three different development growth stages and three levels of fertigation (50, 75, 100 % recommended dose of N and P). The experiment was laid out in Split - Plot Design with three replications. Irrigation through drip was applied on the basis of ETc levels *i.e.* PE* Kp* Kc considering Kc values to be 0.70, 1.05 and 0.90 for initial (25 days), crop development (90 days) and final (35 days) stages, respectively. The fertigation was applied in six split doses at an interval of 15 days after sowing. Investigation results revealed that the the growth, flowering, yield and WUE of fennel significantly increased with different irrigation and fertigation levels. The maximum plant height (141.56 cm), number of branches per plant at 50 per cent flowering (39.22), diameter of main umbel (19.01 cm), dry matter of plant (34.46), biological yield (110.78) and test weight (8.58) were recorded under the treatment of 100 per cent Etc., whereas number of umbels per plant (21.40), number of umbellates per umbel (11.13), number of seeds per umbellate (10.63), seed yield (18.45 q ha⁻¹) and WUE (0.542 q ha⁻¹ cm) were recorded maximum under the treatment of 80 per cent ETc. level. However, the 100 per cent fertigation level was recorded highest plant height (108.52 cm), number of branches per plant at 50 per cent flowering (29.10), number of umbels per plant (18.25), diameter of main umbel (14.65 cm), dry matter of plant (27.33), number of umbellates per umbel (8.34), number of seeds per umbellate (8.17), seed yield (14.39 q ha⁻¹), biological yield (62.50), test weight (7.83 g) and WUE (0.356 q ha⁻¹ cm).

KEY WORDS : Drip irrigation, Fertigation, Water use efficiency, Growth stages, Fennel

HOW TO CITE THIS ARTICLE : Godara, S.R., Verma, I.M., Gaur, J.K., Bairwa, Suresh and Yadav, P.K. (2013). Effect of different levels of drip irrigation along with various fertigation levels on growth, yield and water use efficiency in fennel (*Foeniculum vulgare* Mill.). *Asian J. Hort.*, 8(2) : 758-762.

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