

**RESEARCH ARTICLE :**

## Drip fertigation effects on nutrient and water use by *Rabi* onion (*Allium cepa* L.): A climatological approach

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**ARTICLE CHRONICLE :**

**Received :**

22.07.2017;

**Accepted :**

11.08.2017

**KEY WORDS :**

Crop evapo-transpiration, Crop co-efficient, Drip irrigation, Fertigation, Nitrogen use efficiency, *Rabi* onion, Water use efficiency, Yield

**SUMMARY :** At AICRP on Irrigation Water Management, VNMKV, Parbhani, Maharashtra, India, irrigation and fertigation requirements of *Rabi* onion through drip was optimized during three years of field studies in split plot design with three replications wherein irrigation schedules as main treatments and nitrogen levels as sub-treatments were undertaken. Irrigation schedules comprised of drip irrigation  $I_1$  (0.75 ETc),  $I_2$  (1.0 ETc),  $I_3$  (1.25 ETc) and conventional check basin irrigation at 1.2 IW/CPE with 60 mm depth of irrigation. Nitrogen levels included  $N_1$  (75 kg/ha N),  $N_2$  (100% kg/ha N) and  $N_3$  (125% kg/ha N). Drip irrigation treatments ( $I_1$ ,  $I_2$  and  $I_3$ ) were scheduled at an alternate day as desired by the treatments and depending on crop evapo-transpiration rate whereas surface irrigation was scheduled when CPE reached to 50 mm. Texturally, the soil was clay with field capacity of 36% and permanent wilting point of 17%. The results showed that onion bulb yield and yield contributing characters under drip irrigation schedules were significantly higher than the conventional surface irrigation schedule. Under drip, irrigation depth at 1.25 ETc ( $I_3$ ) recorded significantly higher onion bulb yield than  $I_1$  (0.75 ETc), but it was on par with  $I_2$  (1.0 Etc) during all the seasons and in pooled analysis. The nitrogen level  $N_2$  (100 kg ha<sup>-1</sup>) gave significantly higher onion bulb yield than  $N_3$  (125% kg/ha), but it was at par with  $N_1$  (75 kg/ha). Moreover, highest water use efficiency was observed under treatment  $I_1$  (drip with 0.75 ETc), whereas highest nitrogen use efficiency was under treatment  $I_3N_1$  (drip irrigation with 1.25 ETc depth and 75 kg/ha N). All drip irrigated treatments recorded higher nitrogen use efficiency, as compared to surface irrigated plots.

**How to cite this article :** Lokhande, D.C., Mundhe, A.G. and Bhosale, A.M. (2017). Drip fertigation effects on nutrient and water use by *Rabi* onion (*Allium cepa* L.): A climatological approach. *Agric. Update*, **12** (TECHSEAR-9): 2436-2439.

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