RESPON KUALITAS TANAMAN TOMAT (*Solanum lycopersicum L.*) TERHADAP JENIS PUPUK NITROGEN BERBASIS *POCKET FERTIGATION*

INTISARI

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Tomat merupakan salah satu tanaman komoditas strategis holtikultura di Indonesia yang mengalami peningkatan produksi selama lima tahun berturut-turut. Penggunaan pupuk secara konvensional terutamanya nitrogen dalam upaya peningkatan produksi tomat sering dilakukan secara besar-besaran, ditambah penggunaan air pada irigasi secara konvensional juga cenderung lebih banyak air yang terbuang sehingga kurang efektif dan efisien. Metode fertigasi diketahui cukup efisien dalam penggunan nitrogen dan air, juga efektif dalam pengaplikasiannya. *Pocket Fertigation* merupakan salah satu pengembangan metode fertigasi dengan kombinasi fertigasi tetes dan media porus. Tujuan penelitian ini adalah untuk mengevaluasi *pocket fertigation* dan kondisi iklim terhadap produktivitas air dan biomassa tanaman, juga pengaruh jenis pemupukan nitrogen berbasis *pocket fertigation* terhadap hasil tanaman tomat. Penelitian ini dilakukan pada *screenhouse* di Kebun Percobaan Tri Dharma, Fakultas Pertanian UGM, Banguntapan, Bantul dengan 3 variasi perlakuan, kontrol, Urea dosis 200 kg/ha, dan ZA dosis 200 kg/ha. Setiap perlakuan terdapat 3 ulangan sebagai sampel acak dari populasi perlakuan. Data dianalisis dengan ANOVA dan uji lanjut DMRT 5%. Parameter yang diamati meliputi parameter iklim selama pertumbuhan hingga panen pada umumnya, jumlah pemakaian air tanaman, biomassa tanaman, dan komponen hasil tanaman tomat. Aplikasi *pocket fertigation* pada kondisi iklim yang cukup optimal bagi pertumbuhan tanaman tomat, memberikan nilai produktivitas air tanaman berkisar 6,65-7,96 kg/m^3 dan menunjukkan hubungan yang tidak berbeda nyata antar perlakuan jenis pupuk nitrogen. Pada biomassa tanaman, perlakuan pemberian jenis pupuk nitrogen memberikan pengaruh yang berbeda nyata terhadap bobot segar tanaman dan bobot kering tanaman, tetapi tidak berbeda nyata terhadap panjang dan volume akar. Perlakuan ZA berperan optimal pada pertumbuhan vegetatif dibandingkan fase generatif, yang lebih signifikan dibandingkan Urea dan kontrol. Pengaruh perlakuan jenis pupuk nitrogen berbasis *pocket fertigation* terhadap hasil tanaman tomat, memberikan pengaruh yang berbeda nyata terhadap bobot per buah dan diameter buah. Namun, tidak berpengaruh nyata pada bobot buah per tanaman, warna buah, kekerasan buah, brix, dan indeks konsumsi. Pada bobot per buah dan diameter buah perlakuan kontrol lebih signifikan dibandingkan Urea dan ZA karena pengaruh pupuk dasar kandang yang bekerja lebih optimal.

Kata Kunci : Tomat, *pocket fertigation*, nitrogen, Urea, ZA

QUALITY RESPONSE OF TOMATO (*Solanum lycopersicum L.*) TO POCKET FERTIGATION-BASED NITROGEN FERTILIZERS

ABSTRACT

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Tomato is one of the strategic horticultural commodity crops in Indonesia, which has increased production for five consecutive years. To increase tomato production, the use of conventional fertilizers, especially nitrogen, is often carried out on a large scale, plus the use of water in traditional irrigation also tends to waste more water, making it less effective and efficient. The fertigation method is known to be quite efficient in using nitrogen and water, and it is also effective in its application. Pocket Fertigation is one of the fertigation method developments with a combination of drip fertigation and porous media. The purpose of this study was to evaluate pocket fertigation and climatic conditions on water productivity and plant biomass and the effect of pocket fertigation-based nitrogen fertilization on tomato crop yields. This research was conducted at a screen house at the Tri Dharma Experimental Garden, Faculty of Agriculture UGM, Banguntapan, Bantul using three variations of treatment, control, Urea at a dose of 200 kg/ha, and ZA at a dose of 200 kg/ha. Each treatment had 3 replications as a random sample from the treatment population. Data were analyzed by ANOVA and 5% DMRT follow-up test. Parameters observed include climatic parameters during growth to harvest in general, the amount of water used by plants, plant biomass, and components of tomato yields. The application of pocket fertigation in climatic conditions that are quite optimal for tomato plant growth, gives the value of plant water productivity ranging from 6.65-7.96 kg/m^3 and shows a relationship that is not significantly different between nitrogen fertilizer treatments. In-plant biomass treatment with nitrogen fertilizer had significantly different effect on fresh plant weight and dry weight, but not significantly different on root length and volume. ZA treatment had an optimal role in vegetative growth compared to the generative phase, which was more significant than Urea and control. The effect of pocket fertigation-based nitrogen fertilizer treatment on tomato plant yields had a significantly affected weight per fruit and fruit diameter. However, it had no significant effect on fruit weight per plant, fruit color, fruit hardness, Brix, and consumption index. In weight per fruit and fruit diameter, the control treatment was more significant than Urea and ZA because of the effect of the basic manure which worked more optimally.

Keywords: Tomato, pocket fertigation, nitrogen, Urea, ZA