

Intisari

Budidaya bawang putih (*Allium sativum* L.) di dataran rendah memiliki kendala iklim yang tidak sesuai dengan kebutuhan lingkungan tumbuh. Bawang putih yang dibudidayakan di dataran tinggi menunjukkan pertumbuhan yang lebih baik dibandingkan di dataran rendah. Kondisi lingkungan di dataran rendah dicirikan dengan suhu yang tinggi dan kelembaban yang rendah. Ketidaksesuaian kondisi lingkungan tanaman bawang putih di dataran rendah mempengaruhi fisiologi dan pertumbuhan tanaman. Beberapa teknologi budidaya diterapkan untuk meningkatkan pertumbuhan bawang putih di dataran rendah, antara lain pemanfaatan zat pengatur tumbuh dan agen hayati yang mendukung pertumbuhan. Seperti Asam Giberelin (GA3) yang merangsang pemanjangan sel, pertumbuhan tunas dan Jamur Mikoriza Arbuskula (JMA) yang mendorong serapan hara dari tanah. Penelitian ini bertujuan untuk mengkaji perlakuan GA3 dan JMA terhadap pertumbuhan dan hasil bawang putih. Penelitian ini menggunakan Rancangan Acak Kelompok Lengkak (RAKL) Faktorial Oversite yang terdiri dari dua lokasi. Lokasi pertama tanpa GA3 dan lokasi kedua diberi perlakuan GA3 500 ppm. Setiap lokasi diberi perlakuan JMA dua gram per tanaman dan tanpa JMA. Pengujian hasil Analisis Varians pada taraf 5%, kemudian dilanjutkan dengan Uji Tukey HSD Post Hoc pada taraf 5% apabila terdapat perbedaan yang signifikan pada kedua faktor tersebut. Hasil penelitian menunjukkan bahwa perlakuan GA3 meningkatkan serapan N jaringan tanaman, kandungan giberelin endogen, kadar klorofil a, tinggi tanaman, jumlah daun, bobot daun khas, jumlah siung namun menurunkan luas permukaan akar dan panjang akar total. Perlakuan JMA meningkatkan presentase infeksi mikoriza, serapan N, P, K jaringan tanaman, kandungan giberelin endogen, lebar daun, tinggi tanaman, luas permukaan akar, panjang akar total, volume akar, bobot segar tajuk, umbi, akar, bobot kering tajuk, umbi dan diameter umbi panen. Perlakuan GA3 dan JMA meningkatkan pertumbuhan tanaman tetapi belum dapat mendukung dalam translokasi asimilat ke umbi sehingga belum dapat meningkatkan hasil produksi bawang putih.

Kata kunci: *Allium sativum* L., giberelin, mikoriza, bawang putih, dataran rendah

Abstarct

*Cultivation of garlic (*Allium sativum* L.) in the lowlands has climatic constraints that are not in accordance with the needs of the growing environment. Garlic cultivated in the highlands showed better growth than in the lowlands. Environmental conditions in the lowlands are characterized by high temperatures and low humidity. The incompatibility of the environmental conditions of garlic plants in the lowlands affects the physiology and growth of plants. Several cultivation technologies are applied to increase the growth of garlic in the lowlands, including the use of growth regulators and biological agents that support growth. Such as Giberrellic acid (GA3) which stimulates cell elongation, shoot growth and Arbuscular Mycorrhizal Fungus (AMF) which encourages nutrient uptake from the soil. This study aims to examine the treatment of GA3 and AMF on the growth and yield of garlic. This study used a Factorial Oversight Completely Randomized Block Design consisting of two locations. The first location without GA3 and the second location were treated with 500 ppm GA3. Each location was treated with two grams of AMF per plant and without AMF. Testing the results of the Analysis of Variance at the 5% level, then continued with the Tukey HSD Post Hoc Test at the 5% level if there are significant differences in the two factors. The results showed that GA3 treatment increased plant tissue N uptake, endogenous gibberellin content, chlorophyll a content, plant height, number of leaves, typical leaf weight, number of cloves but decreased root surface area and total root length. The AMF treatment increased the percentage of mycorrhizal infection, N, P, K uptake of plant tissue, endogenous gibberellin content, leaf width, plant height, root surface area, total root length, root volume, fresh weight of crown, tubers, roots, dry weight of shoots, tubers. and diameter of harvested tubers. GA3 and AMF treatments increased plant growth but could not support the translocation of assimilate to tubers so that they could not increase garlic production.*

Keywords: *Allium sativum* L., gibberellic acid, mycorrhizae, garlic, lowland