

RINGKASAN

Kacang hijau (*Vigna radiata*) adalah salah satu jenis tanaman pangan. Tanaman ini memiliki nilai ekonomi yang tinggi dan harga yang lebih stabil dibandingkan komoditas pangan lainnya. Masalah umum dalam budidaya tanaman ini adalah panen yang tidak serempak, yang memerlukan waktu dan tenaga kerja lebih banyak. Giberelin (GA_3) adalah hormon yang mempercepat perkecambahan biji, membantu pembentukan tunas atau embrio, memperpanjang batang, meningkatkan pertumbuhan daun, merangsang pembungaan, dan mengatur perkembangan buah. KNO_3 merupakan pupuk majemuk dengan kandungan nitrogen (N = 13%) dan kalium ($K_2O = 44%$), memiliki peran penting dalam metabolisme tanaman seperti fotosintesis dan transportasi hara. Tujuan dari penelitian adalah mengkaji aplikasi asam giberelin dan KNO_3 terhadap pertumbuhan dan hasil tanaman kacang hijau.

Penelitian ini dilaksanakan di Laboratorium Agronomi dan Hortikultura dan Lahan *Experimental Farm* Fakultas Pertanian Universitas Jenderal Soedirman. Pelaksanaan penelitian dimulai pada bulan Januari-April 2024. Penelitian ini menggunakan rancangan acak kelompok (RAK) dengan 2 faktor perlakuan dan 3 ulangan. Faktor pertama, yaitu konsentrasi giberelin GA_3 ($G_0 = 0$ ppm (Kontrol), $G_1 = 100$ ppm, dan $G_2 = 200$ ppm) dan faktor kedua adalah dosis pupuk KNO_3 ($K_0 = 0$ g/l (Kontrol), $K_1 = 2$ g/l, $K_2 = 4$ g/l, dan $K_3 = 6$ g/l). Variabel pengamatan yang dikaji diantaranya tinggi tanaman, jumlah daun, luas daun, laju asimilasi bersih, laju pertumbuhan tanaman, bobot kering tanaman, rasio tajuk akar, kandungan klorofil, lebar bukaan stomata, kerapatan stomata, aktivitas nitrat reduktase, jumlah polong per tanaman, jumlah biji per tanaman, bobot biji per tanaman, bobot 100 biji, hasil panen total.

Hasil penelitian dianalisis menggunakan uji F dengan taraf kesalahan 5% dan kemudian dilanjutkan dengan uji lanjut *Duncan's Multiple Range Test* (DMRT) pada taraf kesalahan 5%. Hasil penelitian menunjukkan perlakuan konsentrasi GA_3 berpengaruh terhadap tinggi tanaman, laju asimilasi bersih, dan laju pertumbuhan tanaman, jumlah polong per tanaman, jumlah biji per tanaman, dan hasil panen total. Aplikasi KNO_3 meningkatkan tinggi tanaman, jumlah daun trifoliat, rasio tajuk akar, laju asimilasi bersih, laju pertumbuhan tanaman, aktivitas nitrat reduktase, lebar bukaan stomata, jumlah polong per tanaman, jumlah biji per tanaman, dan hasil panen total. Terdapat interaksi antara aplikasi konsentrasi GA_3 dan dosis KNO_3 pada variabel umur berbunga, kadar klorofil-a, dan klorofil total.

SUMMARY

Green beans (Vigna radiata) are one type of food crop. They have a high economic value and a more stable price compared to other food commodities. A common issue in cultivating this crop is the non-simultaneous harvesting, which requires more time and labor. Gibberellin (GA₃) is a hormone that accelerates seed germination, aids in the formation of shoots or embryos, elongates stems, enhances leaf growth, stimulates flowering, and regulates fruit development. KNO₃ is a compound fertilizer containing nitrogen (N=13%) and potassium (K₂O=44%), has an important role in plant metabolism such as photosynthesis and nutrient transport. The aim of this research is to examine the application of gibberellic acid and KNO₃ on the growth and yield of green beans.

This research was conducted at the Agronomy and Horticulture Laboratory and the Experimental Farm Field of the Faculty of Agriculture, Jenderal Soedirman University. The study was carried out from January to April 2024. A randomized block design (RBD) was used, with 2 treatment factors and 3 replications. The first factor is concentration of gibberellin GA₃ (G0 = 0 ppm (Control), G1 = 100 ppm, and G2 = 200 ppm), and the second factor is doses of KNO₃ fertilizer (K0 = 0 g/l (Control), K1 = 2 g/l, K2 = 4 g/l, and K3 = 6 g/l). The observed variables include plant height, number of leaves, leaf area, net assimilation rate, plant growth rate, plant dry weight, root-shoot ratio, chlorophyll content, stomata density, nitrate reductase activity, number of pods per plant, number of seeds per plant, seed weight per plant, weight of 100 seeds, and total yield. The research results were analyzed using an F-test with a 5% error rate, followed by Duncan's Multiple Range Test (DMRT) for further analysis, also at a 5% error rate.

The research results showed that GA₃ concentration treatments affected plant height, net assimilation rate, plant growth rate, number of pods per plant, number of seeds per plant, and total yield. The application of KNO₃ doses affected plant height, the number leaves, root-shoot ratio, net assimilation rate, plant growth rate, nitrate reductase activity, stomata density, number of pods per plant, number of seeds per plant, and total yield. interaction between GA₃ concentration treatments and KNO₃ doses on variables such as flowering age, chlorophyll-a content, and total chlorophyll content.